Journal of
MUSIC THEORY

A PUBLICATION OF THE YALE SCHOOL OF MUSIC

LIBRARY
UNIVERSITY OF UTAH
JAN
PERIODICAL ROOM

ARTICLES

Musica Rhythmica and *Musica Metrica* in Antique and Medieval Theory — *Richard Crocker*

Style as Information — *Joseph Youngblood*

The Problem of Tonality in Pre-Baroque and Primitive Music — *William Thomson*

Johann Mattheson on Affect and Rhetoric in Music — *Hans Lenneberg*

BOOK REVIEWS

THEORY FORUM

BIBLIOGRAPHY OF PERIODICAL LITERATURE

VOLUME II NUMBER 1

April 1958

LIBRARY
UNIVERSITY OF UTAH

Journal of Music Theory

A PUBLICATION OF THE
YALE SCHOOL OF MUSIC

VOLUME II APRIL 1958 NUMBER 1

463872

EDITORIAL STAFF

Editor: David Kraehenbuehl

Assistants to the Editor: Donald Loach
Mrs. Eugene Waith

Historical Editor: Richard Crocker

Editorial Board: Luther Noss
Richard Donovan
Quincy Porter
Leo Schrade
Howard Boatwright
Brooks Shepard
Richard Crocker

Regional Editors:

John Clough
Oberlin Conservatory of Music
Oberlin, Ohio

Stanley Fletcher
School of Music
University of Illinois
Urbana, Illinois

Edwin Gerschefski
Department of Music
Converse College
Spartanburg, N. C.

Bernard Heiden
School of Music
University of Indiana
Bloomington, Indiana

Erwin Jacobi
Mittelstrasse 45
Zürich, Switzerland

John Ritchie
Department of Music
Canterbury University College
Christchurch, New Zealand

Albert Seay
Department of Music
Colorado College
Colorado Springs, Colorado

Frances Berry Turrell
Portland State College
Portland 1, Oregon

John Weissmann
49 Fairhazel Gardens
London, NW 6, England

John White
Department of Music
University of Richmond
Richmond, Virginia

Editorial communications
should be addressed to:

David Kraehenbuehl
School of Music
Yale University
New Haven, Connecticut

April 1958 VOLUME II NUMBER 1

JOURNAL OF MUSIC THEORY

ARTICLES		Page
Musica Rhythmica and Musica Metrica in Antique and Medieval Theory—Richard L. Crocker		2
Style as Information—Joseph E. Youngblood		24
The Problem of Tonality in Pre-Baroque and Primitive Music—William Thomson		36
Johann Mattheson on Affect and Rhetoric in Music—Hans Lenneberg		47
THEORY FORUM		
Howard Boatwright re: Contemporary Tone-Structures		85
Willard Warch re: Beethoven's Use of Intermediate Keys		92
Hans Tischler re: Chromatic Mediants—A Facet of Musical Romanticism		94
William Reynolds re: Unity in Music		97
Leigh Gerdine re: A General Theory of Music		104
BOOK REVIEWS	**Reviewer**	
Dallin: Techniques of Twentieth Century Composition	Nicholas England	107
Reese: Fourscore Classics of Music Literature	David Kraehenbuehl	112
Franklin: Tonality as a Basis for the Study of Musical Talent	George Jacobson	113
Langer: Problems of Art	Wilson Coker	115
McHose-Tibbs: Sight-Singing Manual	Asher Zlotnik	116
Recent Books and Essays not Reviewed		119
Bibliography of Current Periodical Literature		121
Letters to the Editor		123
Contributors to this Issue		125

The cut appearing on the title page was reproduced from Der vollkommene Capellmeister by Johann Mattheson, Hamburg, 1739. Copy in the Library of the School of Music, Yale University.

The Journal of Music Theory is a semiannual scholarly periodical published by the Yale School of Music in April and November of each year.

One year: $3.50 Two years: $6.75

Single issues and back issues: $2.00

© Copyright 1958 by Yale School of Music

WHAT IS MUSIC THEORY?

Our persistent use of the ungrammatical construction "music theory" for "theory of music" may reflect our confusion regarding the proper business of musical theory. Many seem to believe that acoustical theories, aesthetic theories, theories of perception, indeed, any theories whose validity may be tested in the realm of musical activity are musical theories. This is nonsense. The proper object of musical theory is music, that pattern of sounds in time that composers construct to transfer their experience as human beings to others. The object of musical theory is not sound, not time, not human experience, but that particular conjunction of these that we call musical experience.

Even less clearly understood than the object of musical theory is the meaning of the word theory itself. Human knowledge exists in a number of states which, in order of increasing certitude, are hypotheses, theories, natural laws, and revealed truths. It is evident that theories are knowledge in a relatively uncertain state. Facts should not be confused with knowledge. They are the commensurable objects of the universe, the substance rather than the object of knowledge. In music, sound is a fact, its measurement the business of the sound engineer, its pertinence to natural law the business of the acoustical theorist, its artistic organization for purposes of communication the business of the music theorist.

There is a pernicious tendency in all areas of thought to mistake the observation and measurement of facts for theory. The properties of sound, of temporal order, of any particular musical style are observed and measured facts. Musical theory is more than a classified collection of such facts. A musical theory is a general operation which, when applied to the facts of music, produces predicted results. If the application of the theory fails to produce predicted results, the theory is invalid. It must be modified or altogether abandoned in favor of some new hypothesis which, after sufficient testing, may develop into a useful theory.

It is evident that sound and the other facts of music exist only in accordance with natural law. For this reason, many conclude that musical theory can provide natural laws. It is true that music may demonstrate the reality of such laws and that, therefore, a theory of music may provide insight into natural law. This, however, does not give musical theory the status of natural law. Music is an artifice, a human construction which, although it may be "an image of the universe," is not the universe itself. The theory of music is properly limited to the formulation of musical laws which, because musical styles respond constantly to cultural influence, always lack permanence. Whenever musical theories are presumptively elevated to the status of natural laws, theoretical endeavor languishes; as today, a divergence between musical theory and musical practice develops that is detrimental to both.

A right view of musical theory would be a step toward restoring common sense to our activities as music theorists. "Music theory," to maintain the accepted expression, is that area of systematic thought which has as its object, musical experience; as its substance, the properties of sound, time, human experience, and, secondarily, musical calligraphy and paleography. Although the invention and substantiation (which means quite literally "to provide with substance") of a musical theory may require extensive observation of the facts of music, the examination and codification of musical materials should not replace the truly creative and vital aspect of theoretical activity, the formulation and verification of useful musical theories.

DK

MUSICA RHYTHMICA AND MUSICA METRICA IN ANTIQUE AND MEDIEVAL THEORY

by

Richard L. Crocker
Yale University

The concepts of "rhythm" and "meter" attract more and more attention from those who think about music in our own time. In an effort to elucidate the meanings of these terms, various writers have investigated their use by theorists in the past, particularly of classical Antiquity and of the Middle Ages.[1] These investigations have sometimes been coupled, unfortunately, with a disdain of the necessity for determining the various meanings of such terms under different historical circumstances. Terms do have a way of changing their meaning, and there is a danger in assuming that one knows beforehand what a theorist fifteen centuries ago is talking about.

A study of the terms rhythmica and metrica in the older sources not only reveals meanings somewhat different from those which we attach to these terms, but also leads us to an understanding of the nature of medieval music theory itself, which can provide stimulation for our own thinking about theory. The following discussion is concerned primarily with the position of these terms in music theory of the early Middle Ages, and with their background in Antiquity.

It has been remarked that the medieval theorist stands at the juncture of two quite different traditions. On the one hand he inherits from classical Antiquity a set of terms, methods, and ideas which were originally created in connection with the music of Greek classical culture. On the other, he must deal with a legacy of song, the sacred chant of the Church, which seems to have its roots in quite a different culture. Furthermore, the methods and ideas of Greek culture are inherited in the absence of the art-works themselves; the medieval writer knows Greek music only as theory. Contrariwise, the sacred chant presents itself as a practical phenomenon. If there was a corpus of theoretical doctrines indigenous to the chant, it has left but few traces for us to follow. The history of early medieval theory may be seen as the working-out of a relationship between these two elements, a rationalization of the sounding art work — the sacred chant — according to the intellectual methods of Greek theory. For the medieval theorist is immediately concerned with the art-work, which he must sing and teach others to sing from day to day throughout the cycle of the liturgical year.

1. See especially Curt Sachs, Rhythm and Tempo (1953) p. 11 ff.; p. 138 ff.

Since the medieval theorist does not create his terms and methods, but adapts them from a pre-existent body of doctrine, it is important to understand these terms and methods in their original context. This is not to say a priori that a term must mean the same in the third century and in the tenth, or that it must be used in the same way; but merely that we should seek our first understanding of the term at the same source whence the medieval theorist came to know it.

We begin with a text well-known to the Middle Ages, from the Institutiones of Cassiodorus (ca. 470-570 A.D.):[2]

> Musical science is that discipline which discourses of numbers which are in proportional relationships as these numbers are found in sounds: e.g. duple, triple, quadruple and the like, which are said to be proportions.
>
> There are three parts of music: harmonics, rhythmics, metrics. Harmonics is that musical science which distinguishes between high and low sounds. Rhythmics is that part of musical science which investigates the progression of the words, whether the sound hangs together well or not. Metrics is that part of musical science which recognizes and identifies by demonstrable reason the measure of the various meters, e.g. the heroic meter, the iambic, and so forth.

Earlier in the Institutiones Cassiodorus (following the traditional divisio philosophiae) has defined mathematics as that which treats of quantity, or number, and the four disciplines of mathematics as each pertaining to a different manifestation of number[3]; hence the definition of music in the passage just cited: "Music is that discipline which deals with proportions as they manifest themselves in sounds." It is of primary importance to recognize that here, as elsewhere in antique and medieval theory, this definition is not an answer to the question: "What are the attributes of the audible art-work?" but to the question: "What does the vocable musica refer to?" The definition does not involve us in an argument as to whether the creation of the sounding art-work is an art or a science, but simply with a methodological definition of that discipline which goes under the name of "music." The antique (and medieval) theorist uses "music" to refer to what we call "music theory."

Once we understand that music is an investigation of certain phenomena (sounds) in the light of certain basic elements (numbers) the three parts of music fall readily into place. Harmonics, musica harmonica, investigates the proportional relationships between sounds of different pitch — "high and low sounds" — and a glance at any treatise on the subject will reveal that this is universally the case, even today when the overtone series serves as a basis for theories of harmony.

2. Cassiodorus, Institutiones, ed. R. A. B. Mynors (1937), p. 144.
3. Ibid., pp. 92, 111.

The other two parts of music both deal with words, i.e. poetry, at least in Cassiodorus' definition. Since poetry is a variety of sound, and since it is susceptible to systematic investigation in terms of proportions, it is legitimate subject matter for the discipline of music. The distinction of rhythmics and metrics as stated by Cassiodorus is entirely clear and accurate, but so compact as to appear somewhat enigmatic without consideration of a much larger group of texts to which we may now turn our attention.

The distinction between rhythmics and metrics goes back at least to Aristoxenus (4th Century B.C.)[4] and is mentioned regularly up to the end of Antiquity. It has been the subject of numerous discussions in modern times, by philologists as well as historians of music. Perhaps the best summary of the doctrines involved is to be found in Aristeides Quintilianus (1st-2nd Century A.D.)[5], whose remarks are reproduced in more condensed form in Martianus Capella (3rd-4th Century A.D.)[6]. The standard work devoted exclusively to rhythmics is of course the De musica of St. Augustine (354-430 A.D.)[7], and as such this treatise stands beside that of Boethius (ca.475-525 A.D.)[8] devoted to harmonics. In addition, mention is made of rhythmics in many of the late Latin grammatical and metrical treatises[9]. Throughout this body of literature the terms involved and their meanings are used consistently.

---

4. Cf. R. Schäfke, op. cit. infra (note 5), p. 31.

5. Aristeides Quintilianus, Von Der Musik, trans. by R. Schäfke (1937), pp. 209-245.

6. Martianus Capella, De nuptiis Philologiae et Mercurii, ed. A. Dick (1925), pp. 516-533.

7. Augustine, De musica libri sex, Texte de l'édition Bénédictine, Introduction, Traduction et Notes de G. Finaert et F.J. Thonnart (1947).

8. Boethius, De institutione musica libri quinque, ed. G. Friedlein (1867).

9. Fabius Quintilianus, Institutionis oratoriae libri duodecim, ed. C. Halm (1868), IX, 4, 45; pp. 178-181. This perennial masterpiece on style of expression is available in an English version by C.E. Little (1951).

The following treatises are all to be found in the collection Grammatici Latini, ed. H. Keil (6 vols. 1857-80).

Sergius, Explanationes in artem Donati (Keil IV, p. 533).
Marius Victorinus, Ars grammatica (Keil VI, p. 39 ff.).
Maximus Victorinus, Ars Palaemonis de metrica institutione (Keil VI, p. 206 f.).
Atilius Fortunatianus, Ars (metrica) (Keil VI, p. 282).
Terentianus Maurus, De metris (Keil VI, p. 364 ff.).
Mallus Theodorus, De metris (Keil VI, p. 588 f.).
Audax, Excerpta (Keil VII, p. 331).

We have not included the discussions of the clausula or cursus, although this phenomenon employs rhythmus and is referred to as numerus in the sources; cf. M. Nicolau, L'origine du "Cursus" Rhythmique (1930).

As seen in the discussion of Cassiodorus, "music" in these surroundings is a discipline, a mode of investigation, and in like fashion so are the parts of music. Musica rhythmica and musica metrica are not rhythmic music and metrical music; they are not art-forms but modes of analysis; methods, not things. They represent two ways of analyzing one and the same category of art-forms, namely classical quantitative poetry, whether Greek or Latin. It is essential in this connection to recognize that music as a discipline, and thereby also its parts, concerns itself with assessing, in a rational fashion, artworks already created; it is not directly associated with the creative process of the artist. This meaning of "theory" must be differentiated from our contemporary understanding, whereby "theory" consists of systematic precepts of composition. Antiquity and the Middle Ages regarded this latter as a separate phenomenon.

If we consider by way of analogy the study of harmonics, we find that the object of study is the relationship between two tones; this relationship bears the generic name of "harmony," be it a consonant or dissonant relationship, and can best be expressed by a mathematical ratio, e.g. unison (1:1), octave(2:1). All discussions of rhythmics and metrics present the terms rhythmus and metrum as the respective objects of rhythmics and metrics. In place of the obvious translations "rhythm" and "meter," which are liable to involve ambiguity in a contemporary discussion, let us render rhythmus by "proportion" and metrum by "measure."[10]

Proportion, Aristeides tells us[11], may be understood in a variety of ways, general and specific. A statue may be said to have rhythmus, proportion. One may also detect it in motion, as in the dance, and also in sound. It is with the last manifestation that we and the theorists are primarily concerned. In this case the proportion must involve the relationship of units of time. For convenience of presentation, poetry is always selected as the subject matter for rhythmic (and metric) analysis, and hence the syllable is taken as the unit of time.

Quantitative poetry consists of an orderly arrangement of syllables which are linguistically long or short, grouped first into feet and then into verses; e.g. (dactylic hexameter):

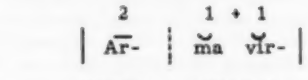
Ār-mă vĭ | rūm-quĕ că | nō Trō | iae quī | prī -mŭs ăb | ō -rīs

Word-accent played no essential role in this technique. Accents may fall on any part of the foot, as for example: cáno, Tróia.

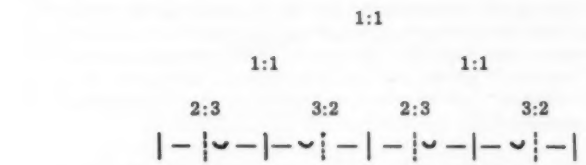
10. In modern usage, of course, the relationship of two numbers is called a "ratio"; "proportion," strictly speaking, refers to the statement of equality between two ratios. We will use "proportion" here in the sense of "ratio," however, since this corresponds to Latin usage. The Greek term ῥυθμός is usually transliterated by the Latin grammarians as rhythmus, although sometimes as rhythmos, and translated into Latin as numerus.

11. Aristeides Quintilianus, Von Der Musik, p. 209.

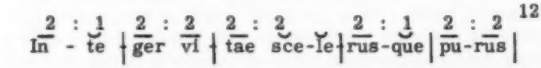
For the purposes of rhythmics, each foot is considered to have two parts, called arsis and thesis, each containing one or more syllables. The short (⏑) syllables are measured by one unit of time, the long (—) syllables by two:



Rhythmus, or proportion, is the relationship between the times of the two parts. Three genera of proportions are generally accepted: equal, or 1:1 (— ¦ —); duple, or 2:1 (— ¦ ⏑); and hemiolia, or 3:2 (— ⏑ ¦ —). The proportions of 3:1 and 4:3 are, in the sources, a matter of controversy; they may occur under certain conditions. These proportions between times may occur either in their simple form; or combined, each with its own kind, into larger groupings, e.g.:



They may also be mixed, e.g. (Sapphic):



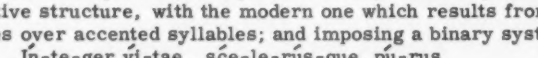
This, then, is rhythmus, and with this musica rhythmica is concerned.

A proportion does not contain within itself any limitation. It may be repeated indefinitely:

The concept of a particular length, a finite group in sound, is referred to as a metrum or measure. The length of a verse of poetry is described as being of a certain measure, specifying the kind and number of feet therein, e.g. "dactylic hexameter," in which each verse contains six dactyls (or their equivalent in terms of time and proportion).

---

12. Compare this temporal order, produced by the original quantitative structure, with the modern one which results from placing long tones over accented syllables; and imposing a binary system of beats:



Metrics, musica metrica, is concerned with identifying, analyzing, and classifying the various measures as used by the poets.

This is the basic distinction between rhythmus and metrum. There are, of course, many implications. A survey of the peculiarities of every discussion in the sources would be far too extensive for presentation here. We may mention only one or two important points. Proportion and measure are both found in quantitative poetry; both involve syllables and feet; and the same theorist may speak now of the proportional, now of the mensural characteristics of a particular poem. Yet there seems to be a distinction between a theorist who concentrates on measures and one who concentrates on proportions. The metricist emerges in most cases as a cataloguer of all the measures which have been sanctioned by use in the classical poets. He describes in a purely empirical fashion the standard forms, and exceptions, which occur in the literature. There is rarely an attempt to theorize, to explain rationally, either the rule or the exception. It is significant that discussions of metrics usually occur in conjunction with those on grammar. It is the grammarian whom Augustine characterizes as the conservative custodian of the literary heritage.[13]

On the other hand, the investigation of proportion is basically a rational matter. This easily leads the theorist who is concentrating on proportions to extend his analyses to include more than merely relationships within a single foot. If he considers the proportions existing between compound feet, he is dealing with groups of syllables whose magnitude is comparable to that of the common measures. He may in other words, not be content to classify measures in the traditional, empirical way, but may treat them as further manifestations of those same proportions he has analyzed within a foot. Thus it is possible for a theorist such as Augustine to analyze poetic structures completely in terms of a rational approach. Significantly, he arrives at some conclusions different from those of traditional metrics.[14] Such alternative analyses (which occur in other treatises as well) are most frequently connected with the complicated "lyric" measures of the Odes of Horace, where there is occasionally a real question as to how a specific arrangement of long and short syllables should be described.

One final qualification — the sources frequently specify that proportion is detected through the sound, the sonus, with the implication that the metricist does not use the sound of the verse as a criterion. In some cases this statement is more carefully explained, and it turns out to have a perfectly clear, but complicated and relatively minor significance. In other cases, however, it is presented in a general way, and here its meaning is not as apparent. It seems to depend upon the circumstance that the analysis of measures is chiefly a traditional affair. Furthermore, particularly at the end of the Antique era, recognition of syllabic quantity became increasingly dependent upon seeing the word on the page rather than hearing it. Both of these circum-

13. Augustine, De musica, II, I, 1 (p. 94).

14. Ibid., V, especially V, 9 (p. 310): Ār ǀ ma vĭr-um ǀ que că-nō ǀ Trō-iae ǀ quī prī ǀ mus ăb ōr ǀ is.

stances point to an analysis by rule and by rote, a visual rather than an auditory approach. The perception of proportion, on the other hand, was from the beginning a study of motion in sound, rational rather than traditional, and even experimental in nature. Whereas syllables need only be recognized as long or short in order to establish the measure, they must be subjected to the judicium auris, the judgement of the ear, in order to determine the actual proportion of times. We may note that Augustine is constantly calling upon his pupil to listen to a line of verse and to judge the proportion accordingly.

The subsumption of rhythmics and metrics under "music" in antique (and medieval) theory is frequently a stumbling block to the modern reader, who immediately assumes that reference is being made to the text of a musical composition and to the relation between the text and its music. As we have shown, this is not a proper inference, for it rests upon a modern interpretation of the term "music." If, in a treatise, "music" does not mean "art-work" or "Rules How to Compose," but rather "theory of proportions in sound," then the inclusion of rhythmics and metrics has no such implication.

Another source of confusion lies in the opposite tendency to assume that rhythmics and metrics are included solely for the sake of an analysis of poetry, whereas they are primarily discussions of temporal proportions per se, using poetry only as one manifestation of these proportions.[15] This is more true of rhythmics than of metrics, for in practice, as we have seen, metrics was carried out in a fashion much less theoretical than was rhythmics, and was nothing but an empirical description of poetic practice, while the rational analyses of the higher, "metric" levels was carried on by an extension of rhythmics from relationships within a foot to those between combinations of feet. Thus, although both rhythmics and metrics were included as parts of music, the inclusion of metrics was purely nominal. Discussions of metrics were usually grouped with grammar rather than with music.

A medieval example of the grammatical environment of metrics may be seen in the Ars metrica of the Venerable Bede (ca. 673-735)[16]. This treatise, exclusively concerned with poetry, contains a brief discussion of rhythmics which is sometimes cited by modern scholars in investigations of medieval rhythm. The discussion involves an application of the classical doctrine of rhythmics to a kind of poetry not hitherto included by antique theorists.

Bede's treatise may be described as a selection of those elements of an antique discipline which are useful and edifying to a Christian and hence worthy of being preserved. The usual detailed description of a hundred or so different measures has been omitted, with a reference to an antique authority for the benefit of the curious. Only the dactylic hexameter is analyzed, and for another half-dozen of the most celebrated measures Bede contents himself with examples, all

15. Cf. the discussion of Augustine in this light in W. Waite, The Rhythm of Twelfth Century Polyphony (1954), p. 29 f.

16. Beda, De arte metrica (Keil VII, p. 227).

by Christian poets. At the end of the treatise Bede mentions rhythmics in a passage which, as several historians have pointed out, is derived for the most part verbatim from a late classical fragment on metrics.[17] Bede's remarks are thus entirely in line with the classical doctrine as we have described it. The only new feature is the reference to a poem which embodies proportion but not measure, or at any rate, not a standard measure. Bede describes this as a metrical pattern achieved through the number of syllables. His example, in keeping with the rest of his treatise, is an Ambrosian hymn. Some hymns of this type are strictly "metrical," that is quantitative, in that the long and short syllables are arranged according to one of the standard measures, as for example:

Jam sur | git ho | ra ter | ti - a |

Bede describes this as an iambic tetrameter, i.e. a measure containing four iambic feet. Some Ambrosian hymns, however, are not strictly quantitative, for the long and short syllables are not arranged according to one of the traditional patterns, or in any pattern. Bede cites as an example:

Rex ae-ter-ne do-mi-ne
Re-rum cre-a-tor om-ni-um

The discrepancies from the classical model are, in the case of these two verses, admittedly slight; indeed the long initial syllable of the second line is permitted as a variation within the classical form. An examination of the whole poem shows, however, frequent discrepancies which are not permissible, such as the syllables -ne and do- of the first verse, and these are apparently sufficient for Bede to disqualify the style as quantitative. There is, nonetheless, a similarity to the metrical model, and Bede describes this similarity as residing in the number of syllables in each verse, namely eight. (Here too the first verse is irregular, lacking a syllable, but succeeding verses are not.)

Bede is referring here to a relatively new kind of poetry, whose verse- and strophe-structure is based upon the technique of counting syllables rather than arranging long and short syllables in patterns.[18]

17. Ibid., p. 258 corresponds to the Ars Palaemonis (Keil VI, p. 206).

18. Cf. W. Meyer, "Anfang und Ursprung der lateinischen und griechischen rhythmischen Dichtung," Gesammelte Abhandlungen zur Mittellateinischen Rhythmik, II (1905). Some critics call this kind of poetry "accentual," asserting that patterns of accented and unaccented syllables replace patterns of long and short syllables. But before the twelfth century the poetry itself reveals an irregular treatment of accent, as in the present example. Furthermore, word-accent is not specifically described by medieval commentators in this connection, while Bede's mention of the "number of syllables" is quite explicit. Either the poets were hopelessly incompetent or accent was not used to organize poetry until later in the Middle Ages.

This new technique, characteristic of Christian poetry rather than pagan, resulted in a variety of poetic forms. One way of applying the technique was to imitate classical measures, as in the example just discussed, where verses and strophes are constructed with an analogous number of syllables, but disregarding the length of the syllables. The appearance of this technique at the end of Antiquity is associated with the simultaneous disappearance of the differentiation of long and short syllables as a phonetic reality. The result of this technique was a poetic form which could not be analyzed by classical metrics, since the sequence of long and short syllables was uncontrolled, yet which had a familiar ring and a certain symmetry (i.e. "proportion") which was apparent to the ear but not the eye of the classically trained critic. The only tool of analysis available to this critic was rhythmics, which, since it was a rational technique operating independently of traditional measures and even of the presence of long and short syllables, could demonstrate the proportion between various numbers of syllables. It could show, for example, that verses which contained an equal number of syllables were equal, a fact self-evident to the ear (if all syllables were pronounced with the same length) but not to the mind of the classical theorist, who would attempt to detect the same pattern of long and short syllables in each verse, or to add up the times of the syllables in each verse, thus arriving at inequality.

Such a poetic form was scarcely recognized by antique theorists, but in early medieval Christian culture it became necessary to deal with it as an increasingly prominent phenomenon. Bede seems to have been one of the first to apply the classical doctrine of rhythmics to this non-metrical poetry. This application was not without later consequence in the history of poetry, as is clear from the use of the English term "numbers" (Latin numerus, Greek rhythmos) to describe poetic constructions, as in the quotation "I lisped in numbers, for the numbers came."

Turning now to the music theory treatises of the early Middle Ages, we find that the comprehensive exposition of musica regularly includes musica rhythmica and musica metrica. These forms of analysis are mentioned in the introduction to a treatise and thereby given their proper place within the framework of music theory as a whole. They are not necessarily discussed in any detail or integrated into the body of the treatise, which regularly concentrates on the third division of music, i.e. harmonics. An example of this treatment of rhythmics and metrics may be seen in the Musica disciplina of Aurelian of Réomé (9th Century A.D.).[19] In defining rhythmics and metrics, Aurelian draws on the texts of Cassiodorus and Bede, adding but little of his own.[20] He understands both of these divisions of music to pertain to the analysis of poetry.

Thus rhythmics and metrics find their way into the medieval music treatise as theoretical tools without practical application. That

19. Scriptores ecclesiastici de musica, ed. M. Gerbert, I (1784), p. 27.

20. Ibid., p. 33 f. But compare p. 35, and our note 21 below.

they are parts of music, i.e. of the mathematical analysis of sound, is unquestioned by the medieval theorist, who inherits the structure of music theory from Antiquity. But this theorist has no need to explain or illustrate them since he can consult any one of several classical authors on metrics and Augustine on rhythmics; and he apparently has little need — or opportunity — to make further application of them to new material, i.e. the sacred chant. Little, that is, in comparison to the application of harmonics, which could be, and was, used systematically and extensively to explain and rationalize the tonal phenomena of the sacred chant.

It was not long, however, before the theorists found ways to apply these tools to chant, for nothing seems to bother an ingenious and resourceful theorist quite so much as to have a tool that he cannot use. Actually, it was only a question of rhythmics, for metrics was forever a thing of the past. The existence of metrical poetry depended upon the phonetic reality of long and short syllables; when these vanished, quantitative poetry could only come about by academic imitation of classical models. But all the models had already been analyzed by classical metrics, therefore there was no creative use to which metrics could be put. But rhythmics was from the beginning concerned with temporal proportion, and only incidentally with poetry. Even in the case of poetry, as we have seen with the Venerable Bede, new application of rhythmics was made. Rhythmics, or proportional analysis, could be applied independently of words in a variety of ways to tonal phenomena. It seems to have been this variety, reflective of the fertility of proportional concepts, which produced such diversity of application as exists among the early theorists. One may suspect that in addition the temporal organization of the sacred chant did not in itself demand any one type of analysis. In any case, the discussions of rhythmics to be found before the twelfth century can only be described as sporadic, exploratory, and even enigmatic. We may mention here another passage from the Musica disciplina of Aurelian of Réomé in which, apparently for the only time in the literature, "rhythmics" is taken to imply that the rhythm of the text affects the rhythm of the melody.[21] This reference is so cursory that no practical information can be deduced from it, except that Aurelian seems to have had no very clear notion of what rhythmics might have to do with singing. Nor is there any reason why he should since his is perhaps the first effort to apply rhythmics to the singing of the chant.

As an example of the way in which this application took place, we will consider the passage cited most frequently in connection with discussions of the rhythm of early medieval music: Chapter XV of the Micrologus of Guido of Arezzo (11th Century A.D.). Its testimony has been summoned to support a variety of theories, and its meaning has been interpreted in manifold ways.[22] Before discussing this chapter,

21. Aurelian, Musica disciplina, p. 35: "In rhythmica autem provisio manet, ut cum verbis modulatio apte concurrat: ne scilicet contra rationem verborum cantilenae vox inepte formetur."

22. Cf. the authors cited by Jos. Smits van Waesberghe, De musico-paedagogico et theoretico Guidone Aretino (1953; cited below as

we must take the liberty of presenting it in extenso, since it is not available in English translation in its entirety.[23]

* * * * * * * * * * *

Guido of Arezzo
Micrologus

Chapter XV - Concerning Proper Modulation and How It Is Accomplished

Therefore, just as in poetry there are letters and syllables, words (partes) and feet and verses, so in harmony there are phtongi, that is sounds, of which one, two, or three are fashioned into syllables; and these, either alone or repeated, constitute a neume, that is a part of a song; and one or more parts (partes) make a phrase, that is a suitable place to breathe. Concerning which things this is to be noted, that the whole part is to be compact both in notation and expression, and the syllable even more compact.

Indeed the tenor, that is the delay (mora) on the last sound, which however small it may be in the syllable is larger in the part and longest in the phrase, stands as a sign of these divisions.[24] And thus it is necessary that we beat time to the song as with metrical feet, and some sounds have a length (mora) twice as long or twice as short as others, or have a tremula, that is a diverse (or "changeable" — varium[25]) length (tenor), which length is sometimes indicated by a horizontal stroke placed next to the letter.[26] And special care is to be taken [to produce] such a grouping of neumes that they, whether made of one tone in repercussion or of two or more linked together, are always related to each other either with respect to the number

"De Guidone"), p. 188 f. Also: L. Kunz, Aus der Formenwelt des Gregorianischen Chorals. 3. Metrische Gestaltung; Textformen (1949).

23. Our translation is based upon the splendid edition of the Micrologus by Smits van Waesberghe (Corpus Scriptorum de musica, 4, 1955). The same editor provided a translation of the beginning of Guido's Chapter XV in his edition of Aribo, De Musica (Corpus Scriptorum de musica, 2, 1951) p. XX.

24. Cf. Quintilianus, Institutionis oratoriae, XI, 3, 37 (p. 287); Donatus, Ars grammatica (Keil IV, p. 372); Sergius, Explanationes artis Donati (Keil IV, p. 484), etc., for descriptions of an analogous grammatical phenomenon.

25. The tremula might involve a length which is not proportionally related, or it might refer to one which can be long or short according to context, as suggested by Kunz, op. cit., p. 31; this would be analogous to the syllaba communis of the grammarians, as in Donatus, Ars grammatica (Keil IV, p. 368).

26. I.e., next to the note for the individual sound as in the analogy at the beginning of the chapter.

of sounds or to the proportion of the lengths (in ratione tenorum) so that equal [neumes] may correspond to equals, or duple or triple to units, and others by a relation of sesquialtera or sesquitertia.[27]

And let the musician ask himself, in beginning his song, which of these divisions to use, just as the metrician makes verses out of certain feet, except that the musician does not bind himself by such inviolable rules, because in all respects this art continually rearranges the disposition of the sounds in a rational variety. Even if we do not often understand this rationality, nevertheless it is believed to be rational for the reason that the mind, which operates by reason, is pleased [by it]. But this and similar things are shown in oral instruction far better than in writing.

Likewise, as is customary, let the phrases of the verses be equal,[28] and sometimes let them be repeated, or varied with some change, however small;[29] and they would be most beautiful in pairs, having parts not too different; and these repetitions may sometimes be changed with respect to mode,[30] or phrases may be found which are similar in ascending and descending.

Likewise let the reciprocal neume return by the same way that it came, and by the same path.[31]

Likewise, whatever distance or direction one [neume] makes in leaping from a high pitch, let the other, answering in the other direction from a low pitch, be opposed by the same, just as happens when we see our own image facing us in the mirror.

Likewise, sometimes one syllable may have one or more neumes, sometimes one neume may be divided among several syllables. These, or indeed all neumes, will be varied, whether they begin with the same pitch or with one

27. Cf. Quintilian, op. cit., IX, 4, 68 (p. 183) where an analogous grouping of syllables within a line is suggested.

28. Here Guido applies a series of rhetorical techniques, derived from antique doctrine, to music. We will give the rhetorical term for each technique, insofar as we can identify it, as well as an appropriate reference to classical sources.

Equality of phrases is known as isokolon or exaequatum membris; Quintilian, op. cit., IX, 3, 80 (p. 164).

29. Parison, or prope aequatum; Ibid., IX, 3, 76 (p. 163).

30. Metabole, or transitum in aliud genus; cf. Quintilian, op. cit., IX, 4, 50 (p. 179); Martianus Capella, op. cit., p. 514.

31. Cf. the versus reciproci (e.g. Marius Victorinus, op. cit., p. 113), a type of verse which reads from right to left as well as left to right.

different with respect to the different qualities of high and low.

Likewise let almost all phrases move towards the principal tone, that is the finalis,[32] or, if desired, towards a closely related one in its stead, and just as the same tone may sometimes end all neumes or most phrases, so may it sometimes begin them; which, if you be curious, you may find in Ambrosian [hymns]. Indeed, there are certain prose-like songs which pay less attention to this, in which large and small parts, and here and there phrases, are found with no care paid to their articulation, in the fashion of proses.

I speak of metrical songs, however, because often we sing in such a fashion that we seem to scan the verses with feet, just as is done when we sing those meters in which care must be taken lest they contain a superfluity of disyllabic neumes without an admixture of trisyllabic or tetrasyllabic.[33] For just as the lyric poets join now these now other kinds of feet, so also those who make songs put together in a rational manner separate and diverse neumes. There is a rational articulation if a moderate variety of neumes and phrases is accomplished in such a fashion that always neumes correspond to neumes and phrases to phrases with a certain simility; that is, let there be a dissimilar similitude, in the manner of the very delightful Ambrose.[34]

For there is no small similarity between meters and songs, when neumes are in the place of feet and phrases in the place of verses, inasmuch as this neume proceeds in the fashion of a dactyl, that one as a spondee, and the other as an iamb, and the phrases may be analyzed some as tetrameters, others as pentameters, and still others as hexameters, and many other things in this vein.

Likewise let the parts and phrases of neumes and of words end together, lest a long tenor on certain short syllables or a short one on long syllables provide a barbarism, which, however, there is rarely need to observe.

Likewise let the effect of the song so represent its matter that in sad things the neumes are low; in happy

32. Homoeoteleuton, or rime; classical rhetoric also knew initial rime; cf. Quintilian, op. cit., IX, 3, 78 (p. 163).

33. A similar formulation, pertaining to irregular meters, in Marius Victorinus, op. cit., p. 97.

34. Cf. Quintilian's discussion of the simultaneous requirements of aequalitas and varietas, op. cit., XI, 3, 43 (p. 288).

things tranquil, in good fortune rejoicing and the rest.[35]

Likewise often we place a grave or acute accent over sounds, because often we bring [it] out with a greater or lesser impulse, in such a fashion that often the repetition of a sound seems to be a raising or lowering of the pitch.

Likewise that, in the manner of a galloping horse, always at the end of a phrase the sounds become farther apart as they approach the breathing place, as if, being exhausted, they arrive at the resting-place slowly. By being written densely or widely spaced, as the case may be, the notes can give an indication of this.

Sounds are made liquescent in many cases in the fashion of letters, so that [the voice] beginning in one kind [of sound] moves limpidly over into the other and does not seem to stop. Furthermore we place a dot under the liquescent sound, like a spot, in this fashion:

[Guido's own illustration of this notation is apparently unavailable.]

If you wish to pronounce this more fully, not making the liquescence, it will do no harm, but is often more pleasing.

And concerning all which we have said, let it be done not too infrequently nor too incessantly, but with discretion.

* * * * * * * * * * *

Before discussing the contents of this chapter in detail, it is important to recall its position in the Micrologus. This "short discourse" on music is devoted primarily to harmonics, that is, to analyses of phenomena concerning pitch. At the end of these analyses, as adjuncts, appear several chapters devoted to other aspects of music. These include 1) a discussion of the effects of music, 2) the chapter on modulation translated above, 3) an analysis of melodic progression (the motus-theory), 4) an exposition of the technique known to the sixteenth century as the soggetto cavato della vocali; 5) precepts on the performance of diaphony, and finally, 6) an account of the origin of music. The first and last chapters of this group, namely those on the effects and origin of music, represent material traditionally contained in antique treatises.[36] By their position in the Micrologus Guido seems to

35. Cf. Quintilian, op. cit., I, 10, 22 (p. 59): "Namque et voce et modulatione grandia elate, iucunda dulciter, moderata leniter canit, totaque arte consentit cum eorum, quae dicuntur, adfectibus." Also XI, 3, 61 (p. 292).

36. Cf. Smits van Waesberghe, De Guidone, p. 147 f., where the plan of the book is interpreted in a different fashion. Pp. 185-198 of De Guidone contain the most recent, as well as the most comprehensive and authoritative discussion of this chapter. With respect to its interpretation, however, we beg leave to differ, both in principle and in detail, from the acknowledged expert on Guido.

indicate that everything in between is likewise a continuation of classical models, if only in method; that these two chapters constitute a frame, so to speak, for the kind of material normally found at the end of a theoretical exposition. And what kind would this be? The comprehensive classical treatise included divisions of music known as melopoeia and rhythmopoeia, which were concerned with the practical application of the principles expounded in the divisions of harmonics and rhythmics.[37] Practical application in this case included both composition and performance. (This aspect of antique music theory was continued in the sixteenth century under the title musica poetica.) Melopoeia and rhythmopoeia naturally followed the strictly theoretical exposition in the structure of the treatise, since they were dependent upon it. And since artistic creation was an ultimately mysterious process, for the antique and medieval theorist as much as for us, such discussions of "making" music could never attain the stature of systematic theory. They remained collections of precepts, some general, some specific, none axiomatic. Their purpose was to guide the composer (and performer) toward arranging his inspiration into artistic order. In Guido's fifteenth chapter melopoeia and rhythmopoeia appear side by side, which is quite natural since the real subject under discussion is not harmony or rhythm as such, but rather the orderly arrangements achieved by harmony or rhythm, that is by pitch or duration.

Thus the very nature of the chapter is responsible for the somewhat confusing organization; it is difficult to find a truly logical order for a collection of practical precepts. Three other factors militate against easy comprehension: first, the fact that this is a "short discourse," executed in a highly compressed style; second, that is is a compendium of precepts, culled from a number of sources, juxtaposed rather than integrated;[38] and third, that Guido seems to be imitating the convoluted elegance of the Latin authors of the Empire. In any case this is hardly the style of an original, creative spirit, as Guido has sometimes been characterized.

A general plan may, however, be perceived in this chapter. After the introductory paragraph, which gives the key to the prevailing method, comes a series of precepts devoted to the temporal relationships of various sized units, proceeding from small to large; then another series concerning harmonic relationships. This merges directly into a more general statement of the types of organization found in the chant, following which the author returns to another series of detailed precepts, this time more appropriate to the performer than to the composer.

We cannot deal here with all aspects of the chapter but only with its method and with the application of rhythmics. The first paragraph contains the well-known analogy between poetry and music. The source of the analogy need not concern us — it is not original with Guido[39] —

37. Cf. Aristeides Quintilianus, op. cit., pp. 205, 227.

38. As Smits van Waesberghe, De Guidone, p. 197 points out.

39. W. Waite, in a review of Smits van Waesberghe's edition of the Micrologus (Journal of the American Musicological Society IX, 2,

but its function, here and elsewhere, is of interest. In the first place, it operates within the liberal arts curriculum in such a fashion as to relate the composition of music to subjects already mastered by the student, namely grammar and rhetoric.[40] In the second place, it opens the way to a ready-made system of terms and methods of analysis which may be applied to musical composition.

A brief survey of the chapter reveals one discussion of proportions, several references to metrics or meters in poetry, and a fairly consistent application of precepts analogous to those of rhetoric, or the analysis of oratorical prose.[41] Now we know that rhythmics, "numerosity," was held in high esteem by these theorists; it represents the learned way of doing things.[42] Therefore we can presume a theorist to make as much application of the doctrines of rhythmics as he reasonably can. But Guido (and the others) make only a limited application. He relies more on metrics and even more on rhetoric to provide terms and methods for analyzing music. An analogy between poetry and music would not be necessary if only rhythmics were to be applied, since rhythmics, musica rhythmica, was the division most akin to harmonics in its underlying mathematical method. But such an analogy would be highly appropriate to introduce the methods of metrics or rhetoric, since these disciplines are much more closely tied to their subject matter, namely words. Guido can invoke metrics, quite properly, as a basis for the discussion of longer phrases; he does not include in metrical concepts the requirement of a regular succession of equivalent feet, as we shall see. Even so, the application of metrics, like that of rhythmics, remains limited. Rhetoric seems to have the greatest affinity with the kind of analysis Guido is pursuing. The rhetorical precepts involved deal with similarities and differences between adjacent phrases in prose; they are not concerned with precise arrangements at the syllabic level, as would be the case in poetry. Phrases in prose may be considered symmetrical if almost equal, and it is exactly in these terms that Guido describes the balance of musical phrases; he also remarks that the precepts of metrics are not as strictly observed by the musician. Since Guido is talking about the sacred chant, the inevitable conclusion seems to be that the musical subject matter itself is much more susceptible of a rhetorical analysis than a metrical one, and even less one involving proportion.

To discover how the application of rhythmics is made, we may

1956, p. 146 ff.) called attention to the textual derivation of a similar passage in the Musica enchiriadis from the commentary of Chalcidius on the Timaeus of Plato.

40. The study of grammar and rhetoric, being parts of the trivium, would precede music, undertaken only within the quadrivium.

41. We have made a beginning in showing the contact with rhetoric by the footnotes to the translation given above. Since the doctrines involved are the common property of the entire Graeco-Latin pedagogical system, our references should be understood as exemplary rather than restrictive.

42. Cf. the Scholia to the Musica enchiriadis, Scriptores ecclesiastici de musica I, p. 183.

examine more closely the second paragraph, which deals with the tenor, or mora. Guido, like the Scholia to the Musica enchiriadis, insists upon a proportional rendering of this longer value which marks the end of a phrase; the longer value must not be simply longer, but must stand in some multiple proportion to the shorter. This is the simplest application of rhythmics. It involves exact proportion and therefore depends on exact measurement of time; hence the reference to beating time: "cantilena plaudatur." The plausus, or beating of the time, was executed in classical rhythmics by a raising of the hand (elevatio, arsis) during the first half of the foot, and a lowering (positio, thesis) during the second.[43] The ratio of the two temporal intervals thus delimited would be the proportion, or rhythmus of that foot.

The sole purpose of the plausus, as far as Guido is concerned, is to ensure the use of equal units of time, and hence a longer value which is exactly twice as long as the shorter. Although the use of the plausus has suggested to many that some kind of poetic rhythm is involved, the plausus does not necessarily imply any specific pattern of feet, or any repetitive grouping of the smallest temporal unit, either in Guido's understanding or in its use in Antiquity. It does not, in other words, represent a "beat" or "pulse" of the type which forcibly projects itself into the future at equidistant intervals, but rather simply marks off time intervals as they go by. The intervals themselves may be equal or unequal; if the latter, then they must be proportional, or at any rate the discipline of rhythmics so demands.

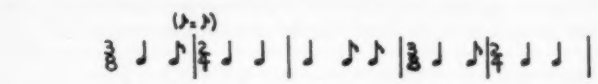
That Guido understands the plausus in this fashion seems apparent from the following considerations. In the paragraph under discussion the plausus is mentioned in connection with the mora at the end of each phrase. Now this particular kind of mora which is the sign of the distinctio seems to be a phenomenon of rhetoric and affects prose, not poetry.[44] This use of a longer time value to mark the end of phrases has nothing to do with arrangements of long and short syllables in poetry. The tenor, then, is to be applied to chant in situations analogous to those occurring in prose, namely at the ends of phrases. Prose, in this case, involves a lack of control of syllabic order, so that no regularity or repetition is present at the level of the smallest temporal unit, as there would be in poetry. Thus the plausus, in these circumstances, could have the function only of rendering the tenor in proportion to the prevailing equal unit of time.

Furthermore, when Guido does refer to rhythmic orders of chant analogous to meters or fixed patterns in poetry (ninth paragraph), he specifically mentions those types of classical meters characterized by a free mixture of feet with proportions of 1:1 and 2:1 — the so-called "lyric" measures. It is precisely these meters, of all classical types, which do not suggest the equidistant repetition of a "beat" or "Takt."

43. Augustine, De musica, II, X, 18 (p. 132).

44. See the sources for this precept indicated above. Quintilian seems to be referring to a silence or rest, whereas Guido is clearly talking about a prolongation of a sound. But compare Aribo, who again understands it as a silence; op. cit. supra (note 23), p. XXIII, 66.

For example, the first verse of the Sapphic strophe (as above, page 6) would be rendered in modern notation thus:



Hence even in the "metrical songs" Guido does not imply any kind of temporal organization except an equal unit of time. Actually, the occasion for Guido's distinction between "prose-like" and "metrical" songs was not rhythmic but melodic order. Only after referring to the stricter (but still irregular) melodic structures implied by the lyric meters does the author turn to a more general discussion, using the "dissimilar similitude" of the lyric meters as a pivot. It is this passage which summarizes the manifold similarity between poetry and music, after the separate discussions of rhythmic and harmonic structure have been completed.

Thus the plausus has the function only of producing an equality of temporal units. It is this equality which is the foundation of all analysis proper to rhythmics as opposed to metrics.[45] For as far as the metricist is concerned it makes little difference whether the long and short syllables of a poem stand in the relation of 2:1 or 7:4 or x:y, as long as "x" is greater than "y". There are, in fact, references in the classical treatises to these irregular lengths which occur in practice.[46] Significantly, these references tend to appear in the context of rhythmics; for it is the rhythmicist who perceives the irregularity, since he, rather than the metricist, is keeping track of the regularity, the equality against which the lack of proportion is perceptible.[47]

Once equality has been established, then proportions between various quantities can be perceived. Guido formulates the conditions under which proportion may occur in very general terms: either between two sounds of different lengths, or between groups containing differing numbers of sounds; the possible proportions include 1:1, 2:1, 3:1, 3:2, 4:3. We may provide our own hypothetical examples for

45. It is perhaps necessary to point out that Guido refers to "metrics" in opposition to "prose," not to "rhythmics."

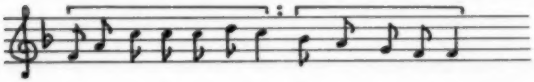
46. Marius Victorinus, op. cit., p. 39, refers to short values shorter than normal, and long ones longer than usual, and describes these as the province of the musici, that is the rhythmici.

47. The Commemoratio brevis de tonis et psalmis modulandis (Scriptores ecclesiastici de musica I, pp. 226-228) identifies aequitas with rhythmus; that is, the author sees that without equal time units there can be no other kind of proportion. His point of departure in the surrounding discussion seems to be Quintilian XI, 3, 43: "Nam prima est observatio recte pronuntiandi aequalitas."

Guido's remarks:[48]

	"with respect to the number of sounds"	"with respect to the proportion of the lengths"[49]
1:1		
2:1		
3:1		
3:2		
4:3		

All proportions can, of course, be applied at any level; for example, to show the proportion between two parts of a verse:



4:3 A-do-ro te de-vo-te, la-tens De-i-tas

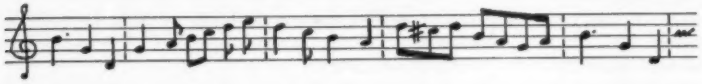
It should be pointed out that our examples are not meant to be representative of any system of transcription, nor are they the only ones which could be picked. They simply embody circumstances which permit application of the mode of analysis described by Guido.

This mode of analysis is, in fact, so general that it can be applied to almost all modern interpretations of Gregorian chant, without providing decisive evidence for any one of them. Furthermore it is applicable to virtually all Western non-monophonic music, simply because it rests upon conditions of temporal organization which were fundamental from Leonin on. In order to see more clearly what the proportional concept of rhythm means, we must ask what Guido (and the other early theorists) were trying to avoid. Clearly, at some times and in some places, the singers performed chant in a way that was unequal and hence non-proportional. Whether this was by use or abuse is

48. Cf. C. Vivell, Commentarius anonymus in Micrologus Guidonis Aretini (1917), p. 65, where other examples from the Commentary are given. Vivell, too, refers the contents of this chapter to antique sources, but, in our opinion, not the appropriate ones.

49. The examples at the right may be understood to occur at the ends of phrases, hence be apt for the tenor, applied here as a doubling of the final tone, and indicated by the "horizontal stroke."

not within the province of this paper to investigate, but we may be permitted a brief summary of the possibilities. The inequality may have been carelessness, a departure from the standard of equality through simple negligence. On the other hand, it might have been the kind of deliberate distortion which creeps into the performance of a familiar repertoire; a metronomic analysis of most performances of a Beethoven sonata would, for example, reveal such irrational, non-proportional time intervals. Or, finally, it may have been the remnant of a rhythmic tradition which recognized irrational lengths as a normal rather than a distorted element. Such a phenomenon has been reported, among other places, in music from Greece.[50]



According to the report, the tempo is sufficiently fast so that the two values (♩. and ♩) are understood not as multiples of a common denominator (♪), but as two different rhythmic elements, one long and one short.

Most, if not all, of the theoretical documentation brought to bear upon discussions of the rhythm of Gregorian chant shows contact with the body of classical doctrines which we have discussed. Furthermore, most, if not all, modern interpretations of the rhythm of the chant summon the witness of the early medieval theorists at least to establish the use of an equal unit of time or of a longer value twice the shorter. If these two cases seem trivial to us, it is only because they are so fundamental to our notion of musical time; apparently they were not trivial for the medieval theorist.

Establishing the genealogy of a mode of thought does not, obviously, invalidate its application; but in dealing with the evidence of the early medieval theorists the following observations would seem to be pertinent. First, the appearance of metrics and rhythmics in theoretical discussions is due to the relevance of their method, not their subject matter; they belong to the discipline of music theory because they are analyses of temporal events in terms of numbers. Second, the mode of their application to the chant is such a general one, being concerned with proportion per se, that it scarcely allows specification of any one arrangement of temporal values. Third, in applying these doctrines to chant, the medieval theorist is relating the theory of one culture to the music of another; the relation may be largely of his own making, not intrinsic to the materials. The very tentative and cursory nature of these applications by theorists who are otherwise passionately comprehensive would seem to be in keeping with the tenuous connection between the doctrines and the art-works themselves.

The treatises of the later Middle Ages present quite a different

50. Thr. Georgiades, Der Griechische Rhythmus (1949), p. 99 ff. The chapter discusses irrational values in general.

picture. A new kind of music — polyphony — became established, and one of the most striking features of the new style at Notre Dame of Paris in the twelfth century was the systematic use of exact and strictly proportional mensuration of tones. Now the theorists were provided with subject matter, art-works, eminently suited to the application of the proportional analyses of musica rhythmica. The diligence with which these analyses are applied after the twelfth century seems to imply, once again, that the cursory application before that time reflects a lack of suitable material.

Without attempting to write the history of the theory of rhythm from the Middle Ages to the present, we may sketch briefly the circumstances of modern usage of the terms involved. From the time of Leonin until the end of polyphonic supremacy around 1600 A.D., theoretical discussion of the temporal aspect of music was concerned with proportional mensuration and was couched in terms derived ultimately from musica rhythmica. The terms standard from the eighteenth century on, namely "Takt," and "measure," are directly derived from those of the polyphonic period: "mensura," and "tactus." "Rhythm" was used in the latter part of the eighteenth century to describe the relationship of phrases, or period-structure.[51] This is what Antiquity included in rhythmopoeia, and indeed one of the most famous theorists of the nineteenth century, Gottfried Weber, mentions this very term.[52] But "rhythm" was used in another and more significant way from time to time: some writers designated thereby the subjective, intangible experiences produced by the temporal relationships of music, as opposed to the objective, mechanical qualities of the varieties of "Takt" or "measure," the temporal framework of music.[53] The word "meter" was introduced to describe this latter phenomenon only incidentally in the eighteenth century, and does not seem to have become regular until our own time.[54]

As a general rule, such changes in terminology reflect real changes in musical style and in ways of thinking about music. This is not the place to describe the stylistic circumstances which evoked a differentiation of "rhythm" from "meter," but it may be mentioned in passing that such a differentiation would have little or no function within Baroque style, and is, on the other hand, very significant in terms of the aesthetics and repertoire of the late eighteenth century.

---

51. Cf. the informative study by L. Ratner, "Eighteenth-century Theories of Musical Period Structure," Musical Quarterly XLII, 4 (1956).

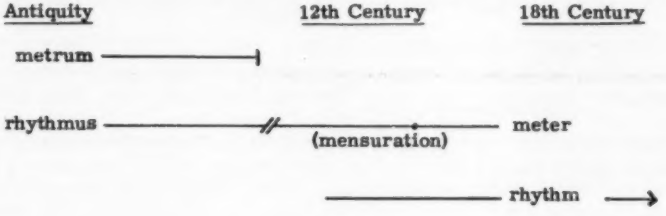
52. Weber's General Music Teacher (trans. J.F. Warner from the third German edition, 1841) p. 69. This is a handy version of the first part of the interesting and important Theorie der Tonsetzkunst (first edition 1817).

53. Cf. the articles "Rhythmus" and "Takt" in the Allgemeine Theorie der Schönen Kunste, ed. J.G. Sulzer (1777).

54. Grove's Dictionary (Fifth Edition, 1954 article "Time") still uses "metre" primarily in a poetic sense, while the Harvard Dictionary (1944, article "Meter") equates "meter" with measure, i.e. variety of time-signature.

More germane to our topic is the observation that this opposition of meter and rhythm is analogous to that of musica metrica and musica rhythmica at the end of the Antique era. In each case the first term involves an empirical description of a set of frameworks, mechanical patterns, while the second opens the way to an analysis of the inner workings of temporal phenomena in terms mathematical or emotional, depending upon the philosophical climate. Or, to state the same in such a way as to remove the apparent dichotomy, "meter" describes the completely familiar and predictable, "rhythm" the less predictable elements in the temporal order of a musical composition.

This parallelism between musica metrica-rhythmica and meter-rhythm must be supplemented, however, with the observation that in the course of two thousand years the phenomenon referred to as rhythmus has crystallized into the mechanical patterns we call "meter." We may conclude with a diagram showing the progressive shift which has accompanied the re-introduction of the terms "rhythm" and "meter."



Rhythmus, or proportion, begins as a vital aspect of quantitative poetry. It manifests itself in purely musical form in the mensuration of medieval polyphony. Finally, the patterns of polyphonic mensuration become the meters, the abstract coordinates, which, when enlivened by dynamic accents, serve as background to the increasingly complex and individualistic rhythms of the nineteenth century.

STYLE AS INFORMATION

by

Joseph E. Youngblood
Indiana University

The purpose of this paper is to explore the usefulness of information theory as a method of identifying musical style.[1] The particular stylistic aspect considered is melody, although any number of other aspects could have been chosen.

The first part of the paper will be concerned with describing information theory and relating it to musical practice. The most fruitful applications of information theory have probably been in the field of communication[2] and in the field of language[3]. The basic assumptions

1. Since the completion of the present paper, the writer has encountered Richard C. Pinkerton's article "Information Theory and Melody," (Scientific American, Vol. 194, 2:77-87). The treatment of the data in the two papers is virtually the same, although there is a basic difference of approach between them. Mr. Pinkerton's work began as an inquiry into the melodic characteristics of nursery tunes, and information theory was chosen, presumably from among several possible statistical methods, as an analytical procedure. The present paper, on the other hand, began as an inquiry into the usefulness of information theory as an analytical device for music, and melody was selected, again from among several possible choices, as the aspect upon which to try it. Mr. Pinkerton's article apparently presupposes a fairly high degree of statistical and mathematical sophistication on the part of his readers, and a rather large part of the paper is given over to discussing ways in which nursery tunes (as well as Shostakovitch tunes) might be mechanically created. Mr. Pinkerton's article is recommended to those readers interested in the subject, since it presents an analysis of a third style, to which the analyses of the two styles in this paper may be compared.

2. Especially Claude E. Shannon and Warren Weaver, The Mathematical Theory of Communication (Urbana, University of Illinois Press, 1949).

3. Charles F. Hockett, in his review of Shannon and Weaver in Language, XXIX, 69-93, suggests several applications. See also E. Colin Cherry, ed., Information Theory (New York, Academic Press, Inc.; London, Butterworths Scientific Publications; 1956), especially pp. 149-153 (D. A. Bell and Alan S. C. Ross, "Negative Entropy of W[illegible]h Words") and pp. 154-170 (Wilhelm Fucks, "Mathematical Theory of Word Formation"); Charles E. Osgood and Thomas A. Sebeok, eds., "Psycholinguistics," International Journal of American Linguistics, Memoir 10 (Baltimore, Waverley Press, 1954), pp. 35-49 (by Kellogg Wilson) and pp. 103-110 (by John B. Carroll); E. Colin Cherry, Morris Halle, and Roman Jakobson, "Toward the Logical Description of Languages in Their Phonemic Aspect," Language, XXIX, 34-46.

underlying this paper are that both music and language are communication systems and that a technique which has proved useful in describing the latter should be applicable to the former.[4] Communication, in the engineering sense, refers to the problems involved in reproducing at one point a message selected at another.[5] The message may be one end of a telephone conversation or a Beethoven symphony, inasmuch as both are sequences selected from or generated by a finite set of symbols — the speech sounds of English or the tones of our musical system. The aspect of the problem which is of particular interest here, however, is not the mechanical one of telephone lines or room acoustics but rather the system of symbols itself and the constraints which it imposes on possible messages.

A composer, setting forth to write a symphony, finds himself confronted by twelve tonal contrasts which may be combined in an infinite number of ways.[6] Because of aesthetic, traditional, or technical pressures, a composer rarely uses more than a small fraction of these possible combinations; he reveals himself as predisposed to certain combinations and quite uninterested in others. This paper will attempt to determine the extent of the restrictions under which certain composers worked; it will not attempt to explain why certain combinations were favored and others eschewed.

In information theory, information refers to the freedom of choice which a composer has in working with his materials or to the degree of uncertainty which a listener feels in responding to the results of a composer's tonal choices. Low information means high predictability and, conversely, high predictability results in low information. Thus, when we read English, we know that virtually every occurence of q is followed by an occurence of u. Writers of English feel a high degree of constraint in their use of q since it virtually imposes upon them the use of u as the next letter. Readers of English, on the other hand, receive virtually no information from the use of u following a q since this use of u was highly predictable. That this predictability is not 100 % is demonstrated by the previous sentence in which q was used without a succeeding u. Similarly, if the leading-tone were always followed by the tonic, we would predict the latter always from an occurence of the former. We cannot say that q is always followed by u, nor can we say that the leading-tone is always followed by tonic. But we can say that the probability of both is quite high in normal English language situations and in traditional harmonic styles respectively.

If information is freedom of choice, then it must be a function of the probability of what might follow. Although the frequency with which

4. Shannon and Weaver, op. cit., p. 95, suggest that this is true, as does George P. Springer, "Language and Music: Parallels and Divergencies," For Roman Jakobson (The Hague, Mouton & Co., 1956), p. 508.

5. Shannon and Weaver, op. cit., p. 3.

6. The possibilities are infinite, since there are no restrictions on the length of the combinations. The possible two-tone combinations are certainly finite, and are equal to 12^2, or 144.

the leading-tone is followed by tones other than the tonic tells us something about the way in which it is used, it would seem useful to have a way of measuring this restraint and comparing it with the freedom with which, for example, the dominant is used. Mathematics has developed a method for measuring information which might also work for the analysis of musical styles.

If one is confronted with a situation in which he must choose between two messages (or events), and either choice is equally likely, then it is arbitrarily said that the information associated with this situation is unity or one[7]. We have seen above that messages may be equated to sequences of musical tones. Let us take a very elementary example. A man is confronted with two drums, a large one (O) and a small one (o). This is the situation which is characterized by one unit, or bit, of information. The reason for the use of this as a measure of information will become apparent as we proceed. If there is nothing to influence the man otherwise, the probability of his striking either drum is, obviously, 50-50 or 1/2 or 0.5, and the possible results are O or o. If he be allowed to strike the drums twice, then the possible messages which he might emit (or the events which might occur) would be doubled, since he might perform any of the following sequences: OO, Oo, oO, oo. The information, or freedom of choice, or degree of uncertainty, associated with this source (in this case, the drums) would also be doubled and would be 2 bits, and the probability of any sequence would be 0.25. This is equivalent to a situation in which the man is given four drums but is allowed to strike only once — 2 bits of information, and probability 0.25 for each drum. Finally, if the man be allowed to strike at the two drums three times, the original information should be trebled. But we see that the possible outcomes of such a performance are eight: OOO, OOo, Ooo, OoO, oOo, oOO, ooO, ooo. It now becomes apparent that the measure of information (number of bits) is progressing on a logarithmic scale; that is, the amount of information in a situation in which all of the results are equally likely is equal to the logarithm (to the base 2 in this case) of the number of choices. The possible number of messages in the above examples involving two drums were 2, 4, and 8, and $\log_2 2 = 1$; $\log_2 4 = 2$; $\log_2 8 = 3$.

Information, or uncertainty, can be increased in two ways: by an increase in the length of the message (effected by increasing the number of strokes) or by an increase in the number of symbols in the source (in this case, the number of drums). We should now be able to assume that sixty-four different combinations would be possible with six strokes; or, which amounts to the same thing, a man with sixty-four drums, of which he may strike only one, would confront a listener with six times as much uncertainty as to the outcome of the action as a man with only two drums. Of course, if he has only one drum, there is no uncertainty, no freedom of choice, and consequently no information, since we know in advance what the message is going to be, and there is nothing to be gained, at least in a communication sense, by his striking it at all.

7. Shannon and Weaver, op. cit., p. 100.

In the situations thus far mentioned, the person beating on the drums was completely free to choose the drums he hit, and it was assumed that he was not biased toward any particular ones. In the situations of primary interest to musicians this is probably not the case, since it is probably true that a composer's style, be it melodic, harmonic, or rhythmic, is recognizable because of its emphasis on certain progressions or other patterns. The next step, therefore, is to investigate the measurement of information in situations in which the choices are not equiprobable but which occur with certain probabilities deduced from the frequencies observed over a period of time.

A source which produces a sequence of symbols (which may be musical tones symbolized by notes) according to certain probabilities is called a stochastic process.[8] For a composer's style to be anything but stochastic would necessitate wholesale variations in it from time to time, in which case it would probably be unrecognizable as a style owing to its very lack of homogeneity. Later we shall observe the frequencies with which three composers use the twelve tones of the chromatic scale and the variations which they show in their usages (see Table I, page 32). One type of stochastic process, the Markov chain, is of particular relevance to our problem. A Markov chain is a sequence of events in time in which each event has a calculable probability. Furthermore, this probability is the result not only of the frequency of the event in the set of events under consideration but also of the effect of those events which immediately preceded it on the event of the moment. The English language situation cited earlier is an example of a Markov process. The letter u normally has a relatively low probability in written English. However, in a sequence of letters involving a q its probability increases to very nearly 100 % at that moment.

A random sampling of Beethoven's music would reveal that, on the average, a certain number of the tones used are tonics; but we would learn more about Beethoven's style if, regarding it as a Markov process, we determined what fraction of these tonics is preceded by leading-tones and what fraction is preceded by other scale steps. A table showing the frequency with which each pitch is followed by each other pitch (see Table II, page 33) is called a "matrix of first-order transition probabilities."

The freedom of choice in a situation wherein each of four drums has a probability of 0.25 is markedly different from another situation in which one drum has a probability of 0.5, a second of 0.25, and the third and fourth of 0.125 each. It will be observed that the sum of the probabilities of a set of choices is always equal to one. Reason tells us that freedom of choice, and therefore information, is greatest when all choices are equal, i.e., when all probabilities are equal to the

8. This is the operational definition of "stochastic process" given by Shannon and Weaver, op. cit., pp. 10, 102. A more general description of the process is given by W. Ross Ashby, An Introduction to Cybernetics (New York, John Wiley & Sons, 1956) p. 162, in which it is contrasted with other, non-stochastic, processes.

reciprocal of the number of choices, and that information must decrease as any one of the probabilities increases toward one, since the other probabilities will, at the same time, decrease toward zero. When probability "1" is reached by any choice, all information, freedom of choice, and uncertainty vanishes, and a situation is reached equivalent to that in which a drummer has only one drum. Obviously, the formula for measuring information in bits as given above (= $\log_2$ of the number of choices) is incomplete, since the number of drums remains constant, whether the probabilities of their being struck are equal or not.

In order to compensate for the inequality of probabilities, Shannon[9] has introduced the quantity of entropy (H), which, for our purposes, is equivalent to information. Entropy is found by multiplying the logarithm of each probability by that probability and summing the results.[10] Thus, in the first example above, the calculation would be (assuming logs to the base 2):

(1) $H = -(0.25 \log 0.25 + 0.25 \log 0.25 + 0.25 \log 0.25 + 0.25 \log 0.25) = 2$

which is the same result as achieved by the former means. In the second case, the calculation would be:

(2) $H = -(0.5 \log 0.5 + 0.25 \log 0.25 + 0.125 \log 0.125 + 0.125 \log 0.125)$
$= 1.75$

which is, as predicted in the previous paragraph, smaller than the amount when the probabilities are equal.

It is generally helpful to compare the entropy of a source with that which it would be if all the choices were equal; their ratio is the relative entropy (H_r). Quantity (1) above represents the maximal amount of information achievable with four drums; the ratio of 1.75 to 2 is 0.875, which means that in the second situation the drummer is 87.5% as free as he possibly could be to choose between the drums that he is using. And what of the other 12.5%? This figure is the redundancy (R) or the restraint on the drummer — that portion of the message which is predetermined by the source.

It is important to avoid attaching a pejorative connotation to the word "redundancy," since it is merely a descriptive term in communi-

---

9. Shannon and Weaver, op. cit., p. 20.
10. This sentence may be expressed mathematically, as

$$H = -(P_1 \log P_1 + P_2 \log P_2 + \ldots + P_n \log P_n)$$

or

$$H = -\sum P_i \log P_i$$

in which P_i represents each of the probabilities in turn. Since probabilities are always numbers less than 1, their logarithms are always negative. The minus sign is introduced by Shannon in order to make the total positive.

cation theory, a measurement of the assurance that the message will be received. An extreme example of linguistic redundancy is shown by the Latin phrase "per Jesum Christum Filium tuum Dominum nostrum," in which the accusative case is marked six times; whereas, if it be assumed that it is necessary to mark words for accusative at all (an assumption which the English language does not make), one marking should be sufficient for communication purposes. It is not necessary to inquire into the reasons for any particular set of restraints being preferred over any others — the pattern of choices might be influenced by the placement of the drums, the aesthetic sense of the drummer, or the presence of a weak head on one drum; it is necessary here only to note and to measure these redundancies. The familiar rhythmic example, boom di-dee boom boom ____ ____, can be completed by virtually anyone, as can the progression, I II^6_5 V_{87} __, and, in this sense, the final elements of both are redundant.

Even though given the preceding chords most musicians can accurately guess the last chord of a Beethoven symphony, few of us would approve of a conductor's stopping an orchestra on the penultimate chord in an effort to cut out at least some of the redundancy inherent in Beethoven's style. One of the things which a piece of music communicates to a musician is information about the style. A certain amount of redundancy is necessary for the transmission of this information. Rather than seeking to eliminate this redundancy, we are interested in finding and measuring it.

The approach described above has been applied in a preliminary way to an analysis of melody. A corpus of twenty songs was analyzed: eight songs from Die Schöne Müllerin by Schubert, six arias from St. Paul by Mendelssohn, and six songs from Frauen-Liebe und Leben by Schumann. The frequency of each of the twelve tones was recorded and the first-order transition probabilities were computed. From these data, the entropy, relative entropy, and redundancy in each category were computed, according to the formulas given above.

The study was limited to melodies in major keys. Once the overall tonality was determined, the whole of each piece was analyzed in that key, that is, if a melody were determined to be in the key of F, F remained the tonic (and was listed as tone I) throughout the piece, regardless of any modulations which might occur. All melodies were considered as proceeding from an enharmonic system of twelve tones,[11] so that the tonic was always I, the raised tonic or lowered supertonic always II, the supertonic, III, etc. The aspect of rhythm was not considered in this study nor were the aspects of phrasing or word-painting.

It might be suspected a priori that Mendelssohn would tend to be the most restricted composer of the three, and this suspicion is borne

11. There may be several factors which influence a composer's choice between enharmonic equivalents, but one of these factors is probably not pitch.

out by the fact that his works show the highest degree of redundancy. Although the P_i[12] redundancy is not much greater than Schumann's, Table I shows that Mendelssohn uses the chromatic degrees of the scale much more sparingly than does Schumann. Schubert, while using the chromatic tones more frequently than Schumann, appears to be more rigid in his usage of them when they are considered as units, as in the frequencies of P_{ij} (see Table II). Furthermore, a great deal of Schubert's apparent chromaticism is a result of modulation, and combinations which occur frequently in the tonic key seem also to be common in other tonal areas into which he moves. Movement from the tonic to the supertonic, which in the tonic key is indicated by I to III, occurs frequently in the key of the lowered submediant, where it is shown as IX to XI. The chromaticism in the Schumann examples, on the other hand, is as likely to be a result of decoration as it is of modulation, as shown by the slightly more random distribution of the two-tone combinations.

In spite of these small variations, however, the overall figures for the three composers seem quite similar.[13] This is probably due in part to the fact that the three are virtual contemporaries and as such cannot be expected to show dramatic divergencies in style. That the three are different is also doubtlessly true, and an analysis of the three from the harmonic point of view, which could also be done by the techniques described in this paper, would probably bring out these differences more clearly.

For purposes of comparison, this same type of analysis was carried out on four selections of Gregorian chant.[14] The four selections were all assigned to Mode I in the Liber Usualis; the steps were numbered diatonically, starting with the final (D) as I and proceeding through the sub-final as VII.[15] The results of this analysis are given in Tables III and IV, page 34.

---

12. In the tables accompanying this paper, P_i refers to the probability of any tone occurring; P_{ij} to any two-tone combination, and $P_i(j)$ to a tone (i) being followed by a tone (j). H = entropy; H_r = relative entropy; R = redundancy, expressed as a percentage. In Table II and Table IV, the rows involve tones (i); the columns involve tones (j).

13. The real significance of these deviations cannot, of course, be determined until a range is established through the analysis of much more music.

14. The selections analyzed are the Gloria, Sanctus, and Agnus Dei from the first Mass for Solemn Feasts (Liber Usualis, pp. 19-22), and the Kyrie from the Mass Orbis Factor for Sundays throughout the Year (Liber Usualis, p. 46).

15. Although both B and B^b occur as the sixth degree of Mode I, they can be considered alternate forms (or conditioned variants) of the same structural pitch-area. A linguistic analogy is provided by the initial sounds of the English words "key" and "cool." The two are different from an articulative point of view, since the former is produced with the lips spread and the tongue forward, whereas the latter is produced with the lips rounded and the tongue drawn back. Structurally, however, the two are conditioned variants of the same sound. Cf.

Viewed as being the product of a seven-tone diatonic system, the chant shows a high degree of entropy. Although the final and dominant appear most frequently, the remaining tones are more evenly distributed than the chromatic degrees in the first group of composers. It is important to keep in mind that these figures refer only to chants in the first mode from the Ordinary of the Mass, even as the previous figures referred only to songs in a major key; analysis of the psalm-tones would doubtlessly have given different results as would the analysis of piano works in a minor key.

It is also interesting to note how these figures appear when the chant is viewed as progressing from a twelve- rather than a seven-tone system. The writer does not feel that this is completely unjustified, since modern listeners are prepared to respond to twelve divisions of the octave, and consequently, maximum uncertainty is for them represented by $\log_2 12$ and not by $\log_2 7$. The redundancy shown in Table V, page 35, is on the whole higher than that of the romantic composers considered earlier, but even then the average redundancy in the first-order transition probabilities is still slightly lower than the average for Mendelssohn.

As was indicated earlier, some means of including the effects of such obviously important factors as rhythm, position in phrase, modulation, and word-painting would have to be found before this system could be accurate even for melody alone. It has not been tested on the more difficult, but possibly more fruitful, aspect of harmony. Most musicians can at present either intuitively or on the basis of certain vague generalizations identify at least five or six historical styles. It seems, however, that it would be useful to find a means of identifying and quantifying the characteristic features of a style, as well as measuring the differences between styles, if for no other reason than to provide a basis for understanding and evaluating contemporary music.

Charles F. Hockett, "A Manual of Phonology," International Journal of American Linguistics, Memoir 11 (Baltimore, Waverley Press, 1955), p. 35. That the distinction between B and B^b ultimately became structurally relevant in Western music seems incidental to a consideration of Gregorian chant.

Table I

Tonal Frequency in Melodies of
Schubert, Mendelssohn, and Schumann

Tones	Schubert	Mendelssohn	Schumann
I	182	103	215
II	7	4	16
III	168	84	148
IV	23	6	13
V	124	84	144
VI	83	52	66
VII	16	7	22
VIII	203	104	208
IX	30	7	5
X	78	68	118
XI	29	8	23
XII	82 / 1025	50 / 577	88 / 1066
	H = 3.127 H_r = 0.87 R = 13%	H = 3.03 H_r = 0.846 R = 15.4%	H = 3.05 H_r = 0.85 R = 15%

Table II

Matrix of First-order Transition Probabilities for Schubert (St), Mendelssohn (Mn), and Schumann (Sn).

Tone (j)		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	H	H_r	R%
I	St	29	0	27	5	33	3	1	26	1	7	10	40	2.89	0.807	19.3
	Mn	29	0	12	1	6	6	1	11	2	7	2	26	2.81	0.785	21.5
	Sn	86	1	33	0	24	9	1	18	2	6	8	27	2.59	0.72	28
II	St	5	1	0	0	1	0	0	0	0	0	0	0	1.15	0.321	67.9
	Mn	0	1	3	0	0	0	0	0	0	0	0	0	0.81	0.226	77.4
	Sn	1	4	7	0	2	0	0	0	0	1	0	1	2.15	0.60	40
III	St	57	1	38	4	15	13	2	13	0	7	0	18	2.68	0.750	25.0
	Mn	23	3	24	2	13	5	0	5	0	4	0	5	2.69	0.752	24.8
	Sn	31	3	50	3	26	4	0	10	0	11	1	9	2.65	0.74	26
IV	St	3	2	11	2	0	0	0	3	1	0	1	0	2.28	0.638	36.2
	Mn	0	0	2	2	1	0	0	1	0	0	0	0	1.92	0.536	46.4
	Sn	0	0	1	0	10	0	0	0	1	1	0	0	1.15	0.32	68
V	St	24	0	41	0	13	4	1	36	0	5	0	0	2.25	0.629	37.1
	Mn	14	0	25	1	17	16	1	5	1	2	0	2	2.60	0.726	27.4
	Sn	32	1	37	0	34	5	5	18	0	12	0	0	2.54	0.71	29
VI	St	1	0	24	8	36	2	0	6	1	5	0	0	2.17	0.606	39.4
	Mn	1	0	2	0	26	14	0	5	0	2	0	2	1.98	0.553	44.7
	Sn	2	4	3	0	20	24	0	9	0	4	0	0	2.29	0.64	36
VII	St	1	0	0	0	1	0	7	7	0	0	0	0	1.54	0.430	57.0
	Mn	0	0	0	0	3	0	0	2	0	2	0	0	1.56	0.346	65.4
	Sn	1	0	0	0	1	4	4	10	0	0	0	2	2.19	0.61	39
VIII	St	33	2	12	3	22	39	6	58	7	5	2	14	2.92	0.816	18.4
	Mn	20	0	6	0	6	10	6	41	0	13	0	2	2.51	0.701	29.9
	Sn	31	0	7	8	16	18	9	89	1	17	0	12	2.64	0.74	26
IX	St	3	0	0	1	1	0	0	10	5	4	6	0	2.47	0.690	31.0
	Mn	1	0	0	0	2	0	0	0	0	4	0	0	1.38	0.385	61.5
	Sn	1	0	0	0	0	0	0	2	0	2	0	0	1.52	0.42	58
X	St	3	0	6	0	0	18	0	19	4	25	0	3	2.38	0.665	33.5
	Mn	7	0	7	0	4	0	0	25	3	14	2	6	2.57	0.718	28.2
	Sn	8	2	7	0	3	1	3	36	1	35	3	19	2.58	0.72	28
XI	St	2	1	0	1	0	1	0	1	10	3	9	1	2.49	0.696	30.4
	Mn	0	0	0	0	0	0	0	0	0	4	4	0	1.00	0.279	72.1
	Sn	1	0	2	1	0	0	0	1	1	8	9	0	2.16	0.60	40
XII	St	28	0	9	0	1	2	0	20	0	15	2	5	2.41	0.673	32.7
	Mn	10	0	3	0	5	2	0	9	0	16	0	7	2.41	0.673	32.7
	Sn	28	0	2	1	9	0	1	8	0	21	2	16	2.51	0.70	30
													Average	St		35.7
														Mn		44.3
														Sn		39
														St	5.37	0.75	25
													P_{ij}	Mn	5.34	0.745	25.5
														Sn	5.52	0.772	22.8

Table III

Tonal Frequency for Gregorian Chant Considered as a Seven-tone System.

Tone	Frequency
I	156
II	84
III	92
IV	98
V	110
VI	41
VII	77
	658
H	2.720
H_r	0.969
R	3.1%

Table IV

Matrix of First-order Transition Probabilities for Gregorian Chant Considered as a Seven-tone System.

Tone	I	II	III	IV	V	VI	VII	H	H_r	R%
I	50	21	17	11	9	1	43	2.355	0.858	14.2
II	40	9	24	8	0	0	3	1.867	0.665	33.5
III	22	37	3	25	5	0	0	1.923	0.685	31.5
IV	2	0	41	10	40	4	1	1.758	0.626	37.4
V	14	0	4	35	23	22	12	2.362	0.841	15.9
VI	0	0	0	0	24	6	11	1.366	0.487	51.3
VII	28	16	4	4	5	14	6	2.436	0.868	13.2
						Average				28.1
						P_{ij}		4.695	0.836	16.4

Table V

Redundancy of Gregorian Chant
Considered as a Twelve-tone System
Compared with the Average Redundancy of
Schubert, Mendelssohn, and Schumann.

	Gregorian Chant	Romantic Composers
R_i	24.1%	14.5%
R_{ij}	34.4%	24.4%
$R_{i(j)}$	43.9% (average)	39.3%

THE PROBLEM OF TONALITY IN PRE-BAROQUE AND PRIMITIVE MUSIC

by

William Thomson
Sul Ross State College

Within the first half of our century, the term "tonality" has become imprecise to the point of acting more as an emotional stimulus than an accurate description of musical events. In one case it functions as a vague expression for musical coherence; in another context it implies non-progressiveness or pedantry. Once such a useful term becomes established in a professional vocabulary, each person who utters it tucks his own set of meanings behind it without systematically considering the implications which follow from his personal interpretation. I do not propose that this be considered a particularly dangerous linguistic vice. It is the normal evolution of any word so pressed into the front-center of musical polemics during our experimental half-century. However, it seems reasonable to wish for a more precise understanding of any word so firmly imbedded within our understanding of music. In at least one way, I believe that this loose understanding of tonality has led to a perversion of historical fact. It is this problem which I hope to reveal here and, ideally, to resolve. I refer to the widespread opinion that tonality is a phenomenon characteristic only of polyphonic music or, as is sometimes urged, only of music that appeared concurrently with what we often call "the harmonic consciousness."

Two schools of musicians have been particularly outspoken in their insistence that tonality is not a universal quality. A number of twelve-tone composers have denied the psychological necessity of tonality, claiming that the relating of tonal events to a central tone (or chord) was a stylistic peculiarity of the period extending, roughly, from 1600 through some works of our present day. Similarly, a number of important historical musicologists have denied the universality of tonality in claiming that modality and tonality are mutually exclusive terms. The historical musicologist's arguments have in turn enjoyed occasional support from a few anthropological musicologists who have concluded that tonality is not present in primitive man's songs. The attitudes which stem from these two points of view are significant, for an understanding of our musical scene turns, to a great extent, upon our understanding of the music of our past and the general role played by tonality in that music.

A clear example of a somewhat narrow view of what is meant by the term "tonality" is revealed in a statement made by Stravinsky.

> We thus no longer find ourselves in the framework of classic tonality in the scholastic sense of the word. . .Having

> reached this point, it is no less indispensable to obey, not new idols, but the eternal necessity of affirming the axis of our music and to recognize the existence of certain poles of attraction. Diatonic tonality is only one means of orienting music toward these poles. The function of tonality is completely subordinated to the force of attraction of the pole of sonority. All music is nothing more than a succession of impulses that converge toward a definite point of repose. That is as true of Gregorian chant as it is of a Bach fugue, as true of Brahms' music as it is of Debussy's. The general law of attraction is satisfied in only a limited way by the traditional diatonic system, for that system possesses no absolute value.[1]

It is difficult to understand why tonality cannot mean what Stravinsky here prefers to call "pole of attraction, point of repose." The term evidently means for him only a system of tonal relations which result from the diatonic systems of major and minor or the generalbass practice of the early eighteenth century. Since poles of attraction and points of repose can be found in the music of any era, any culture, it seems unnecessarily delimiting to demand such a narrow understanding of what tonality is and means in the musical experience.

But there are other examples of this narrow interpretation. Manfred Bukofzer, for example, presents the adoption of tonality as one of the most salient features of the musical change from medieval and renaissance styles to that of the Baroque. With Bukofzer, tonality seems to be a limited harmonic principle by which chords are related in progressions derived from the diatonic scale system.

> Tonality may be defined as a system of chordal relations based on the attraction of a tonal center. This tonic formed the center of gravitation for the other chords. It is no mere metaphor if tonality is explained in terms of gravitation. Both tonality and gravitation were discoveries of the baroque period made at exactly the same time.[2]

We could interpret this statement as the recognition of man's awakened consciousness of tonality during the Baroque. Bukofzer certainly did not mean to imply that gravity did not exist before its laws were unraveled. Perhaps he meant that tonality, then, merely gained recognition as a structural force at this time. But this interpretation

1. I. Stravinsky, The Poetics of Music (1947), pp. 35-36.
2. M. Bukofzer, Music in the Baroque Era (1947), p. 12.

is closed to us when later we are told that

> [Tonality] emerged at approximately the same time in the Neapolitan opera and in the instrumental music of the Bologna school and was codified by Rameau more than a generation after its first appearance in music . . . The technical means of achieving key-feeling were, aside from the cadence itself, diatonic sequences of chords that gravitated toward the tonal center.[3]

Implicit within such a concept of tonality is the assumption that tonality and modality are necessarily separate, mutually exclusive ordering forces. Modality is a melodic principle; tonality is inextricably bound up within a system of chords. In support of this assumption we find also that in renaissance music

> The progressions from any one combination to any other . . . were dictated not by a tonal or harmonic principle, but by the melodic laws of part-writing . . . The intervallic harmony of renaissance music was directed by modality, the chordal harmony of the late baroque by tonality.[4]

It would seem that Willi Apel concurs with this view.

> In Gregorian chant and similar bodies of monophonic music the relationships are of a purely melodic character . . . whereas a much more complex situation is encountered in the field of harmonized music.[5]

But what are the "laws" or "relationships" that are "purely melodic"? And what is the "attraction," as Bukofzer calls it, exerted by a tonic? In other words, within a series of chords, what causes one chord to dominate its associates and, thereby, become a center of aural focus? Could the laws which control the monophonic situation likely be the same which control the signification of a tonic in a chordal texture?

One aspect of Rameau's theory of the natural bass was the recognition that certain intervallic (melodic) relations formed between chord roots create pleasant and decisive harmonic progress. In other words, even in the historical period singled out by Bukofzer, tonality is not

3. Ibid., pp. 219-220.
4. Ibid., p. 12.
5. Harvard Dictionary of Music (1944), "Tonality."

recognized as a product only of a "chordal" principle. Rather, it is a "melodic" pattern created by chord roots that reinforces a particular tonal point and its accompanying triad. It seems clear that tonality could be present then without triads, for the chordal roots alone could establish a pattern conducive to a tonic effect.

Another concept of tonality similar in many respects to the above, can be found in the writings of Schoenberg. He believed that the music we call "modal" does not possess the attribute of tonality. He said that "on the contrary, we must concede that the church modes do not at all conform to the law of tonality."[6] It was on this basis that he developed a triangular historical perspective that admitted of a rise, a period of floration, and a subsequent period of decline and abandonment for tonality. And Ernst Krenek joins Schoenberg in his belief that tonality was a late-comer to the music of the Western world, though his date does not agree with Bukofzer's.

> Tonality arose into the foreground during the late medieval period . . . To us, tonality undoubtedly means that it is possible to establish a system of relationships and interdependencies between the harmonies that inhabit the area of a sound language. Tonality is in this sense a harmonic principle and therefore has no legitimate place in the development of music as we have considered it so far. [He refers to a previous discussion of medieval monody.][7]

Krenek's statement gives rise to the same problem we encountered before; we are not told how chords create tonics. And there are at least two other points which beg for clarification. We know, for instance, that musica ficta practices in the church frequently transformed modal chant into something quite removed from modal theory, often simple major-minor systems. We also know that the Greek modal system was overhauled (with devastating results) and applied to chant considerably after this body of melody was collected and codified. These two considerations necessarily kindle a certain skepticism in regard to any thoroughgoing relation we might try to establish between modal theory and modal practice.

A comment made by George Herzog seems applicable here: "In the study of folk music there has been perhaps a little too much preoccupation with scales and intervals, which are merely the raw materials of melody, at the expense of tonality."[8] The origins of chant certainly do not exlude it from this opinion. The entire theoretical, as well as

6. In "Problems of Harmony," Schoenberg (1937), ed. M. Armitage, pp. 265-306.

7. E. Krenek, Music Here and Now (1939), pp. 108, 109.

8. Standard Dictionary of Folklore, Mythology and Legend (1950), "Song: folk song and the music of folk song."

common-sense, basis for music-making in the Western world has been grounded upon the assumption that structural relationships do exist between pitches, unadorned by harmonic, i.e. chordal, support. It even smacks of contradiction to speak of pitches in a melody without the prior assumption that those pitches, in the listening experience, arrange themselves into patterns which support tones of dominance as points of aural attention or focus. But Krenek, and we may assume Bukofzer and Apel as well, would not accept an analysis of chant based on tonality. He believes that to examine plain-song in terms of tonality is a "vain enterprise." He elaborates by saying that

> Doubtless, repetition of the pattern involved in the iteration principle, would show the predominance of certain tones in the melodic line over others; but this would not necessarily give them the character of fundamental tones carrying certain chords, for the reason that no chords were as yet involved. To my mind, it is not the fact that a particular tone happens to be the first in a scale which makes it the basic tone of that scale; for that matter, it might as well have been the fifth or the last tone. A tone becomes the tonic only when the central triad is built over it.[9]

Perhaps Krenek is unaware that he has switched his gaze from Gregorian chant to a scale. But music is not made from scales; rather, scales are, as Hindemith has aptly put it, the "sterilized derivative of melody."[10]

Krenek is right in maintaining that the initial tone of a scale possesses no metaphysical quality whereby it is rendered fundamental to its gamut. That is why the scale, abstracted as it is from the real musical substance, is valueless for the determination of a structurally fundamental tone. The tonality of a piece of music is not discovered by an analysis of a pitch series that has been culled from it. Only relations in musical contexts can determine the signification of one tone as a tonic.

But the most questionable facet of Krenek's denial of tonality in melody has not yet been touched. We again are not told how a "central triad" in a chordal texture becomes "central." Inherent in this oversight lies the primary fault of many who admit tonality only to the domain of "post-chordal" music. Krenek cannot hold that a tone becomes a tonality center only because of the presence of a triad above it, for this would be tantamount to saying that every root of every triad within a texture is a tonic. Though in a certain sense this is logically undeni-

9. Krenek, op. cit., p. 110.

10. P. Hindemith, "Methods of Music Theory," The Musical Quarterly, 30:25.

able, experience still forces us to regard one of these triads as predominant.

To recognize harmonic implications or tonality in primitive music is generally frowned upon by musicologists most acquainted with studies of primitive man's songs. Hornbostel expressed his disbelief that pure melody was related to melody born of a "harmonic" environment such as ours in the following:

> Pure melody — unlike ours — is not conceived harmonically; and so long as we cannot divest ourselves of the idea — so natural to our way of thinking — that it is based on harmony and interpret it in this sense, we arbitrarily change its meaning and cannot arrive at a proper understanding of it.[11]

In one respect Hornbostel's statement is justified, but in another it is misleading. The difficulty revolves about what is here meant by the term "harmony." If he understands by that term the traditional concept of harmonic relations, his dictum is compelling. On the other hand, if he means to deny that certain peculiarities of tone relations tend to establish a framework of harmonic reference — in the sense of establishing a pattern of primary relationships to one tone — then he denies the very basic quality of melodic perception.

But I believe that Hornbostel was merely cautious, for we find a softening of his view in the following:

> On the other hand, pure melody does contain elements related probably to those which, in our music, have contributed to form harmony. As the compass of the melody, in most cases, is small, fourths and fifths are more important and more frequent than octaves. But even then they are too wide to be used in melodic sequence. . . They are rather used as constructive elements determining the distance between predominant notes, the compass of melodic phrases, and the rise or fall of a melody when its position is changed (transposed). In this way they mark out the field where melody is at play. We can say, therefore, that pure melody, too, has "tonality," its tonality being established by the functions and the mutual relations of the notes.[12]

11. E. M. Hornbostel, "African Negro Music," Africa, I:30.
12. Ibid., pp. 35-36.

The framework function performed by certain intervals, especially by fifths and fourths, sometimes major thirds, apparently exerts some effect upon the extreme pitch ranges of a melody. This has been revealed in the music of at least one culture by Herzog. In generalizing about the character of Yuman songs, he says

> The tonal range of most songs falls within the interval of the fifth and the tenth. As a rule, one of the tones can be established as "tonic" on the ground that it carries the most melodic weight. . . The tonic is often the lowest tone of the melody, usually also the final tone. Tones next in melodic importance can be found at various points. In general, they appear above the tonic, seldom below.[13]

These structural facts about certain species of primitive music indicate a kind of deployed harmonic field created by melody similar to that discussed by Hindemith in Book I of his Craft of Musical Composition. The use of intervals such as fourths and fifths (the range of the particular song permitting) as structural points of emphasis implies an harmonic relation essentially no different from that to be found in any theme by Mozart or Haydn.

This "harmonic field" is no recent discovery, of course, for as early as the turn of the century George Santayana (certainly not an acute musical theorist) stated that

> What a rich note is to a pure and thin one, that a chord is to a note; nor is melody wholly different in principle, for it is a chord rendered piecemeal. Time intervenes, and the harmony is deployed; so that in melody rhythm is added, with its immense appeal, to the cumulative effect secured by rendering many notes together.[14]

It seems that a real basis for denying tonality — even a harmonic structure — for pre-baroque monody or polyphony is elusive. Melodies, no matter how naive or "unharmonic" cannot represent pure states of pitch-to-pitch motion. The human perceptual mechanism exhibits a tendency — even a necessity — to group tones into patterns whose parts possess a simultaneous or contiguous existence.

There are powerful objections to the belief that Gregorian chant, or any other monodic music of man's history does not, or did not, during the time of that music's inception, incorporate tonality as a struc-

13. G. Herzog, "The Yuman Musical Style," Journal of American Folklore, 41:192.

14. G. Santayana, Reason in Art (1906), p. 49.

tural feature. A precise and thorough analysis of the causes of tonality in the music of the late baroque and classical periods would reveal features which are just as solidly present (though perhaps not as obviously so) in monody, primitive song, or renaissance polyphony.

Any musical experience presents a fundamental situation of perception. A cognitive process takes place which is basically no different from any other of man's experiential processes. The creation or recognition of a hierarchy of musical relations within which musical tones are cognitively transformed into organized patterns is a result of the need for simplicity in human experience. In regard to the necessity of such an attitude, the words of the late Andrew Ushenko are relevant.

> Cognitive transformation is unavoidable because superfluous and obstructing tendencies are always left out of account; but the resultant picture brings out a consistent character of the original the more clearly.[15]

And Wolfgang Koehler has made clear the psychological basis for what we might call the "tonal patterning" that leads to a tonality experience.

> If all the content of the sensory field were indifferent grains of sensory stuff, it would be a hard task to orientate ourselves in and to react to such a world.[16]

Tonality represents the musical result of this cognitive transformation. As listeners, we do not soak in musical tones as though we were indifferent sponges, each tone particle related equally and balanced with all others. Just as in visual perception, we create a hierarchy of elements from physically undifferentiated matter.

This is not to say that the role of the composer is not considerable in such a scheme of things, whether he be a twentieth-century American or an aboriginal Indian. On the contrary, the composer's function, crudely speaking, is to arrange musical tones according to basic laws of perception which make the tonality process interesting, as well as possible. If this were not true, the composer would assume the legitimate role of chef de système, his sole problem that of tracking down ever-different schemes for arranging notational patterns on the lined page. In spite of our experimental century, I cannot believe that future knowledge of human psychology or the history of musical style will support such a view.

A number of responsible persons have expressed the belief that music is constantly in a state of stylistic flux — each sociological mutation giving rise to a corresponding alteration in musical ideals and systems. Related to this notion is the opinion that there are no uni-

15. A. P. Ushenko, Power and Events (1946), p. 50.
16. W. Koehler, Gestalt Psychology (1947), p. 177.

versal laws operative within the historical record of music. The conclusion is that tonality and related matters are mere results of sociocultural conditioning. I cannot fully concur with such an opinion, nor do I believe that our present knowledge of past eras and man's unchanged psychological makeup bear out such a view. We are compelled to agree with Max Schoen that there are certainly elements within the musical experience that are "not dependent on experience and training alone."[17]

Suppose that we consider our experience of tonal relations to those of one man of the past. For this purpose we have the introspective testimony of the octave effect from one who wrote many hundred years ago.

> Why is it that in the octave the concord of the upper note exists in the lower, but not vice versa? Is it because, speaking generally, the sound of both exists in both, but if not so it exists in the lower note; for it is the greater?[18]

And further:

> Why is it that the difference of an octave may be undetected and appear to be in unison as in the Phoenician lyre and in the human voice. For the sound contained in the upper note is not in unison, but the interval of the octave has notes analogous to each other.[19]

Even the current recognition of "tonal volume" can be found paralleled in the following query:

> Why does the low note contain the sound of the high note? Is it because the low note is heavier? It is like an obtuse angle, whereas the high note is like an acute angle.[20]

These comments are not just relevant historical curios. Rather, they pose a serious threat to any denial of common perceptual modes throughout the history of our musical culture. It is justified to believe that if a pseudo-Aristotle recognized in the octave much the same properties we take for granted today, his conceptualization of other intervals known to him would not be far from our own.

But tonality does not have to be understood in a purely "harmonic"

17. M. Schoen, The Psychology of Music (1940), p. 46.
18. Aristotle(?), Musical Problems I, XIX. 13.
19. Ibid., XIX. 8.
20. Ibid., XIX. 14.

sense, as some theories of tonality imply.[21] The melodic framing action mentioned before, whereby certain intervals act as tonal reference points, is not the sole determinant for creating reference points within musical textures. A great number of primitive songs do not extend over a range that permits such forces to act. As a matter of fact, some evidence indicates that the earliest forms of melody made use of only two tones, usually those tones neighboring each other in the potential pitch series.[22] There are definite (though flexible) laws which govern such tonal sequences, but analyses of those here would go far beyond the scope of this paper. Since my purpose here is only to reveal the inadequacies of a too narrow understanding of tonality, it seems sufficient to emphasize here that a particular range does not have to be spanned for a tonic effect to result. In the absence of intervals serving the "framing" function, such matters as contextual location, rhythmic stress, duration, repetition and dynamic emphasis, as well as such general factors as rising or falling inflection, enter into the matter of pitch-focus.

It seems that we are justified in allowing tonality a wider berth within the history of music. There is no reason to perpetuate the unnecessary marriage of tonality and harmony (in its connotation of chordal texture). Such a conception has impeded the formation of an all-embracing theory of music that would eliminate the superficial but retain the universal, the necessary.

The conceptualization of tones into patterns more readily "understood" lies as the very foundation for the meaningful, the comprehensible musical experience. This perceptual transformation, which merely follows the lead given in music by the composer or improviser, governs any combination of tones, whether they assume melodic or chordal forms. It is this "path of least resistance" which the listener is offered by his very nature that permits him to realize "music" from disparate sensations of sound. This is true whether these sounds be formed into what we might call "Gregorian chant" or "progressive jazz."

Perhaps the meaning of tonality has been perverted only because of its notoriety during the early part of this century. After the dramatic ramblings of Wagner from one tonal field to another the abandonment of tonality in its diatonic meaning appeared plausible. It most likely appeared necessary and good to a culture that saw in mere change the ethical trappings of "progress."

I suspect that the simplicity in which tonality is cloaked in the music of the late baroque, the pre-classic, and the classic periods was so overwhelming that music of other, less "direct," eras appeared to be devoid of this quality. When an object or idea is overbearing in its effect, we sometimes are blinded to the presence of like qualities which reside in related objects or ideas. The wholesale exploitation of

21. For example, those of Hindemith and Schenker.

22. See Curt Sachs, The Rise of Music in the Ancient World (1943), p. 32.

the major and minor scales, key as an element of form, and preponderantly consonant triadic harmony all combine to magnify the sense of tonality in the music of the period 1700-1850.

And the case of primitive music, perhaps is not more complex. Anthropology, like psychology, is an infant science. There has been a tendency to emphasize difference more than similarity in studies of cultures removed from our Western sphere of influence. The result has been unfortunate, for emphasis on stylistic change has hidden elemental qualities, emphasizing musical differences at the expense of the basic fabric of the musical experience.

JOHANN MATTHESON ON AFFECT AND RHETORIC IN MUSIC (I)*

by

Hans Lenneberg
Brooklyn College

Any student of the history of music is aware of the new emphasis on expressiveness that characterizes the beginning of the Baroque sometime before 1600. Less well known, however, at least to those students who are not adept at reading German, is the formal doctrine of expressive music that developed gradually through the seventeenth century. This Affektenlehre or "doctrine of the affects," as it has come to be called, has been treated fairly extensively in German musicological writing; but in other countries it has been neglected. Even so thorough a study of the period as the late Professor Bukofzer's Music in the Baroque Era deals with the subject in a somewhat perfunctory manner.

The doctrine of the affects and its sister doctrine of musical rhetoric were not merely theoretical approaches to a kind of music criticism; they were meant to be practical guides to composers. Any tendency to look upon Johann Mattheson and other writers on these subjects as mere theoreticians should be suspended until their music and even the music of their greatest contemporary, J.S. Bach, has been re-examined. It will then be seen that affect and rhetoric are elements to be reckoned with when studying the music of the Baroque.

The doctrine of the affects, i.e. how the emotions can be expressed in music so that they arouse corresponding emotions in the listener, is the property of the Baroque only in so far as emotional expression is the stated aim of the period as a whole and because of its quasi-formal treatment at that time. The awareness of a relationship between music and specific emotions existed as long ago as the times of Plato and Ptolemy and is a recurring theme throughout the history of music. The theorists of the late Baroque base their writings largely on the work of Descartes who deals with the nature of the emotions in De passionibus animae (1649) where he says that the soul receives its feelings through the esprits animaux, a concept still related to that of the "humours." Mattheson believed that music was "the straightest path to the soul" because of its ability to move the spirit (he calls it Lebensgeister) and its affects, "and to unseat the same." According to him, therefore, a musician ought to know something about the emotions in order to be able to arouse them. In the course of his many writings, spread out over the years of his long life, Mattheson became more and more specific; from a modest beginning in Das neu-eröffnete Orchestre

*A translation of selected portions of Der vollkommene Capellmeister (1739).

(1713), he finally created a veritable catalogue of almost all that should be known by the composer in order to write affectingly. It has been said that Mattheson's preoccupation with completeness in regard to the affects is not so much that of a practical composer as that of a man under the spell of the Enlightenment, a period in which the neat categorization of knowledge was a general tendency. The implied accusation contained in this statement that Mattheson went beyond the practical is correct; one often wishes that he could be personally challenged. Except for certain reservations, however, one can usually understand his point of view. These reservations generally concern the question of whether certain affective devices can be perceived by the listener. Thus, while it may be true that the courante, as Mattheson maintains, is useful for expressing hopefulness, one might question whether that emotion would be aroused forthwith in one hearing the courante given by Mattheson, an example he regards as clearly qualified to produce this result. The problem is that Mattheson in his Capellmeister does not restrict himself to primary emotions such as happiness and sadness but claims that even jealousy (which, according to him is a compound of seven different emotions) can be expressed. One can see that a composer may make subtle distinctions between the "settings" of various different emotions, but only a listener carefully schooled in a standardized musical symbolism — which would, after all, be an intellectual rather than an emotional process — could perceive definite differences between them. At best, successful use of subtle affective differences will result in the listener's satisfaction with the apt setting of words, if there is a text. Mattheson, however, though interested primarily in vocal music, says that "instrumental melodies" by themselves can and should also express emotions. Among the emotions that can be conveyed by instrumental music alone he lists contentedness, flirtatious pleasantry, eagerness, desire, frankness, frivolity. Surprisingly, perhaps, Mattheson frowns on the use of onomatopoeic devices, which he considers superficial, since they only imitate sounds rather than give voice to the deeper contents.

According to the Encyclopaedia Britannica, rhetoric is "the art of using language in such a way as to produce a desired impression upon the hearer or reader." This definition immediately makes obvious that there is an analogy between the techniques of rhetoric and of music so far as the affects are concerned. During the Middle Ages rhetoric, the formal study of which originated in ancient Greece, was part of the trivium (along with grammar and logic) and was still a required subject in the secondary schools of Germany in the eighteenth century. The rhetorical figures of speech appear in German theoretical writings on music quite frequently and many of them are defined by Walther in his Musikalisches Lexicon (1732), thus demonstrating that their applicability to music was an accepted fact. Mattheson, who as usual avoids going into great detail, nevertheless proceeds further than other writers in applying rhetoric to musical structure by maintaining that a good composition should have the same form as a good speech, and he tries to demonstrate this by breaking an aria into the parts required by formal oratory. It is not clear to the translator how widely his opinion on this aspect of musical rhetoric was shared; the use of rhetorical figures in music, however, can and has been demonstrated — again in

the compositions of J.S. Bach. That part of the art of rhetoric concerned with the invention and elaboration of subjects, the loci topici or commonplaces, as they are called, seems to offer to the translator the only explanation for Bach's unusual title Inventionen und Symphonien and for a statement in the preface to this work in which he says that these compositions are meant to demonstrate — among other things — not only how one can obtain good musical ideas (Inventionen) but also how to carry them through.

Rather than anticipating here what Mattheson has to say, we shall let him speak for himself. The reader who is interested in pursuing the subject of the affects further and who wishes to compare Mattheson's opinions with those of other eighteenth-century theoreticians is advised to consult F. T. Wessel's dissertation just published on microfilm (The Affektenlehre in the Eighteenth Century, University Microfilms, 14674, 1956). A convenient feature of this work is the collating in tabular form of the opinions of the various writers of the eighteenth century regarding specific affective devices.

It is the translator's belief that, ideally, the reader who wishes to make serious use of an original source should not rely entirely on any translation since even the most scholarly transference from one language to another involves subjective factors on the part of the interpreter. To make it easier for the reader who wishes to resort to the translation primarily as an aid to reading the original, the translator has not only maintained the original paragraph numbering but has also retained italics wherever Mattheson employed them except when italics were introduced by him to indicate a quotation. The purpose of Mattheson's use of italics is not always clear, and they might often have been dispensed with here were it not that they serve as convenient guides for the reader who is also consulting the original.

At the risk of appearing pedantic, the writer has endeavored to keep the following translations from the Capellmeister as close to the original as proper and clear English usage will permit. Sometimes, where Mattheson's verbosity obscures his meaning, it has been necessary to take certain liberties; these, however, have always been indicated by the inclusion of the original word or phrase in brackets or by an appropriate footnote.

The employment of the term "affect" instead of "affection" has a precedent in William J. Mitchell's translation of C. P. E. Bach's Versuch über die wahre Art das Klavier zu spielen (1759), although English dictionaries regard as obsolete the use of this word as a noun meaning "emotion." The translator does not believe that Mattheson's various synonyms for "Affekt" were meant to have subtly differentiated connotations. They have, nevertheless, been rendered by a variety of English synonyms, these being in the main consistently used for the sake of parallelism with the original. When good English usage indicated that an exception to this consistency was desirable, the exception has been indicated. The following glossary lists the synonyms used by Mattheson and the respective English equivalents that have been adopted:

Affekt	affect
Leidenschaft Passion	passion
Neigung Gemütsneigung	sentiment
Bewegung Gemütsbewegung	emotion
Temperament	temperament

Asterisks indicate Mattheson's own footnotes, while those of the translator are numbered. Whenever words or phrases from the original have been quoted, Mattheson's spelling has been retained.

A word should be said about the title of the entire work which is referred to by the translator in the original German. In modern German the word Kapellmeister, which literally means "orchestra master," is used in the sense of "orchestra-" or "band-director" but only with reference to the leader of a dance or marching band. In Mattheson's time, the concept of "conductor" in the modern sense did not yet exist, and the term Kapellmeister appears to have meant "director of music." Mattheson must be using it somewhat euphemistically, since no director of music would have needed much of the instruction contained in this work which, besides dealing with styles, affects, and rhetoric, also explains elementary harmony, part-writing, rhythm, etc., all subjects of which a moderately competent music director should already have knowledge. Bearing this in mind, the writer, if he were to adopt a translation of the title at all, would maintain the spirit of the original by rendering it as The Complete Music Director although The Complete Musician might be more literally appropriate.

In making an extract, suitable for publication in a periodical, from what was originally a master's thesis at New York University (Graduate School of Arts and Science) the translator has had to omit anything that did not directly pertain to affect and rhetoric. While this gives a somewhat onesided view of the work of the versatile Mattheson — he was a composer, church-musician, holder of a diplomatic post, literary man and translator[1] — it is to be hoped that the reader will bear in mind that he is reading only excerpts from the writings of a clever and learned man.

* * * * * * * * * * *

1. For a biography that includes a critical bibliography of Mattheson's work, see B. C. Cannon, Johann Mattheson, Spectator in Music (1947).

Concerning Sound and the Natural Science of Music
(Selections from Part I, Chapter III)

49. The fifth part of the science of sound[2] which, since physical weakness is often caused by the states of emotion, has much in common with the preceding one, is the most outstanding and important of all. This part examines the effects of well-disposed sounds on the emotions and the soul.

50. This, as is readily seen, is material that is as far-reaching as it is useful. To the musical practitioner it is of more importance than to the theoretician, despite its primary concern with [theoretical] observation.

51. Of much assistance here is the doctrine of the temperaments and emotions, concerning which Descartes* is particularly worthy of study, since he has done much in music. This doctrine teaches us to make a distinction between the minds of the listeners and the sounding forces that have an effect on them.

52. What the passions are, how many there are, how they may be moved, whether they should be eliminated or admitted and cultivated, appear to be questions belonging to the field of the philosopher rather than the musician. The latter must know, however, that the sentiments are the true material of virtue, and that virtue is nought but a well-ordered and wisely moderate sentiment.

53. Where there is no passion or affect, there is no virtue. When our passions are ill they must be healed, not murdered.

54. It is true, nevertheless, that those affects which are our strongest ones, are not the best and should be clipped or held by the reins. This is an aspect of morality which the musician must master in order to represent virtue and evil with his music and to arouse in the listener love for the former and hatred for the latter. For it is the true purpose of music to be, above all else, a moral lesson [Zucht-Lehre].

55. Those who are learned in the natural sciences know physically, as it were, how our emotions function. It would be advantageous to the composer to have a little knowledge of this subject.

56. Since, for example, joy is an expansion of our vital spirits

2. The first three points discussed in the preceding paragraphs of this chapter deal somewhat briefly and naively with the nature of sound, the nature of "sounding bodies," sympathetic vibrations, and overtones. ("Each musically useful sound already contains its harmony, and one can usually hear its octave and fifth.") The fourth point is a discussion of the healing power of music.

* De passionibus animae [1649].

[Lebens-Geister], it follows sensibly and naturally that this affect is best expressed by large and expanded intervals.

57. Sadness, on the other hand, is a contraction of those same subtle parts of our bodies. It is, therefore, easy to see that the narrowest intervals are the most suitable.

58. Love is a diffusion of the spirits. Thus, to express this passion in composing, it is best to use intervals of that nature (intervallis n. diffusis et luxuriantibus).

59. Hope is an elevation of the spirit; despair, on the other hand, a casting down [Niedersturtz] of the same. These are subjects that can well be represented by sound especially when other circumstances (tempo in particular)[3] contribute their share. In such a manner one can form a concrete picture of all the emotions and try to compose accordingly.

60. To bring in all the emotions would result in longwindedness and we shall touch on only the most important ones. Since love is so prevalent in music, it is reasonable to place it before all the other emotions.

61. Much depends, in this respect, on the composer who must make careful distinctions between the degrees and kinds of love he wishes to or ought to express. The diffusion of the spirit that causes the sentiment can happen in a variety of ways and one cannot possibly treat all kinds of love similarly.

---

3. Zeitmaasse has been translated as "tempo." The term, which Mattheson uses interchangeably with the noun "Rhythmic," is defined in Pt. II, Ch. VII, as a measuring and ordering of time and motion in music. According to this definition it appears to mean "meter." Nevertheless, the term has been translated as "tempo" since it had that meaning also, particularly when used in connection with the affects "...where they [Zeitmaasse] are based not so much on mathematical correctness as on good taste. The French call the first meaning la mésure, the second, le mouvement. The Italians call the former la battuta, the beat, and the latter by such adjectives as affettuoso, con discrezione, col spirito, etc. ... The difference between these kinds may be roughly suggested by slow and fast; there are, however, much finer distinctions."

This is probably the best place to insert Mattheson's few remarks on the affects expressed by such Italian adjectives as the above. "In examining larger and more presentable instrumental compositions, the uncommon variety in the expression of affects as well as the observation of each and every rule of punctuation can be readily felt, provided the composer knows his business. Adagio expresses sadness; lamento, a lament; lento, relief [Erleichterung]; andante, hope; affettuoso, love; allegro, consolation; presto, desire; etc. (It is well known that the adjectives that give directions for the tempo of the music are often used as real proper nouns to distinguish compositions.) Whether or not the composer intended it, this is the effect." Pt. II, Ch. XII, §34.

62. A composer of amorous pieces [verliebte Sätze] must utilize his experiences, whether past or present. Thus he will find the best example of this affect in himself and be, therefore, best able to express it musically. If he has no experiences or strong feelings of his own in this noble passion, he had best leave the subject alone. He may succeed in everything except in this all too tender sentiment.

63. A charming example of love and invention thought suitable to its expression was given to us by the famous Heinchen [sic][4] in the preface to the first edition of his Thorough-Bass[5], where he also mentions some few of the loci topici.[6] He gives us five different settings of the words Bella donna che non fa? Its translation, "What will a lovely lady not do?," while literally correct, is incorrect according to its meaning which really refers to the power of beauty, as if to say, "she can do anything." Such an interpretation would not be musically as unfruitful as one might suppose. We should take the power of beauty as our main purpose and treat its charming glances as secondary matters.

64. In the newer and much enlarged edition of the work by Heinichen praised above, under the title Der Generalbass in der Composition[7], more than eight pages are devoted to further examples. They consist of, to use the author's words, several "seichten Texten und truckenen Arien"[8] by means of which there is to be shown the wealth of musical inventions in accordance with the natural science of sounds. There are pieces that express not only racing, quarreling, majesty, fear, play, and fighting, but also unity, happiness, flightiness, sorrow, love, fieriness, yearning, sighing, flirtatiousness, and even chiaroscuro [schattenreich ?]. All are well worth reading.

65. Desire cannot be separated from love. However, the difference between the two is that the latter is concerned with the present,

4. Johann David Heinichen, 1683-1729.

5. Neu erfundene und gründliche Anweisung ... zu vollkommener Erlernung des Generalbasses (1711).

6. The term locus topicus comes from rhetoric and might be translated into English as "commonplace," that is, a common place where minds can meet. Webster's New Collegiate Dictionary gives the following: "a passage noted for ready reference; also, formerly, a collection of such passages." Both terms, locus and topicus, mean place; locus is Latin and topicus comes from Greek, topos.

7. Published in Dresden in 1728.

8. The literal translation of these words is "shallow [superficial] texts and dry arias." If Heinichen seems here to be referring to his own work in a derogatory manner, it is only because Mattheson has taken his words out of their context. Heinichen has been saying that even shallow texts can result in good musical ideas when the loci topici are examined. He then goes on to demonstrate by setting a "dry" aria. Actually the phrase Mattheson quotes above does not exist quite in that form originally, but represents a rather violent contraction. "Shallow texts" are referred to in footnote m on page 30 and "dry" arias in the text on page 31 of Der Generalbass in der Composition (the spelling of the original).

the former looks to the future and, as a rule, is intrinsically more violent and impatient. All yearning, all desire, all wishing and wanting, whether moderate or the contrary, belong here. One must invent and arrange one's music according to the manifold character of desire, as well as with regard to what is wanted or desired.

66. Sadness is a quite important affect. In sacred works, where this emotion is most moving and beneficial, it rules all these: penance, remorse, sorrow, dejection, complaint, and the recognition of our misery. Under these circumstances sorrow is better than laughter (Eccl. 7). A writer we have already mentioned* gives a good reason why most people prefer to hear sad rather than happy music, namely, "almost everybody is unhappy."

67. In secular music in which sadness has no special purpose, there is, nevertheless, infinite opportunity to use this fatal emotion as well as its varying degrees and kinds. Each of these [kinds], according to its particular character, can give rise to particular inventions and expressions through the manifold contraction of tones and intervals.[9]

68. Like love, sadness must be felt and experienced more than any other emotion if one wishes to represent it musically. If it is not felt, all the so-called loci topici (local places of rhetoric)[10] will be lost. The reason lies in the fact that sadness and love are closely related.**

69. It is true that the other emotions too, if they are to be represented naturally, must be felt by the composer. However, since sadness goes against the purpose of life and interferes with human [self-] preservation, ... although man often takes a kind of pleasure in sorrow, it requires more effort to master this emotion without feeling it.[11]

---

* La Mothe Le Vayer [Francois, 1588-1672, literary man and scholar].

9. "Vielfältige Zusammenziehung der Klänge und Intervalle." While the "contraction of intervals" is understandable (see ¶57 above), the contraction of "tones" or "sounds" does not have logical meaning. It is probably of no importance, since Mattheson most likely meant nothing more than "intervals." The translator of German in general and of Mattheson in particular encounters this difficulty very often. Two words are used either redundantly, as is probably the case here, or the distinction between them is so subtle that it cannot be rendered in English.

10. A literal translation of "örtliche Stellen der Rede-Kunst."

** Qui dit amoureux, dit triste. Bussy Rabutin, Memoir [sic]. [R. de Rabutin, Comte de Bussy, 1618-93, a cousin of Madame de Sévigné and author of L'Histoire amoureuse des Gaules.]

11. A discursive and irrelevant portion of this paragraph as well as all of the following two paragraphs (of the same nature) have been omitted. The gist of this omitted material is that joy is much more

72. Pride, haughtiness, arrogance, etc., all have their respective proper musical color as well. Here the composer relies primarily on boldness and pompousness. He thus has the opportunity to write all sorts of fine-sounding musical figures that demand special seriousness and bombastic [hochtrabende] movement. They must never be too quick [flüchtig] or falling, but always ascending.

73. The opposite of this sentiment lies in humility, patience, etc., treated in music by abject [erniedrigenden] sounding passages without anything that might be elevating. The latter passions, however, agree with the former in that none of them allow for humor and playfulness.

74. Stubbornness is an affect that is entitled to its own place in musical speech. It can be represented by means of so-called capricci[12] or strange inventions. These may be written by introducing certain dogged passages in one or the other part and resolving not to change them, cost what it may. The Italians know a kind of counterpoint they call perfidia[13] which, in a sense, belongs here, although it will be mentioned again in its rightful place below.

75. As far as anger, heat, revenge, rage, fury, and all other such violent emotions are concerned, they are far more suitable to all sorts of musical inventions than the gentle and agreeable passions, which must be treated with more refinement. It is not enough, however, to rumble along, to make a lot of noise, and to go at a fast clip; notes with many tails will not suffice, contrary to the opinion of many people. Each of these harsh characteristics demands its own particular treatment and, despite strong expression, must have a proper singing quality. This is our general rule that should never be forgotten.

76. Music, like poetry, occupies itself a great deal with jealousy. Since this state of emotion is a combination of seven passions, namely, mistrust, desire, revenge, sadness, fear, and shame, which go along with the main emotion, burning love, one can easily see why it gives rise to many kinds of musical invention. All of these, in accordance with nature, must aim at restlessness, vexation, anger, and mournfulness.

---

natural than sorrow. "However, its misuse by ruthless persons often does much damage." The greatest value of joy lies in its use in praising God.

12. "Capricci are hard to describe, since the inventions used in them differ. The stranger and more unusual they are, the better. One must, however, not use them too much." Pt. III, Ch. XXV, §62.

13. "Perfidia (Ital.) perfidie, deloyauté, infidelité (Fr.) usually means infidelity. In music, however, it means ostination, i.e. a semblance of persisting in the doing of the same thing, of pursuing one's intention in the same passages, the same melodies, the same meter, the same notes, etc., without interruption. Zarlino calls it pertinacia. Cf. Brossard, Dictionnaire, p. 94." Johann Gottfried Walther, Musikalisches Lexikon (1732), p. 472.

77. Hope is an agreeable and pleasing thing. It consists of joyous wishing which, along with some courage [Hertzhafftigkeit], occupies the spirit. As a result, this affect demands the loveliest conduct of melody and the sweetest combination of sounds [lieblichste Führung der Stimme und süsseste Klang-Mischung] in the world. These, as it were, are spurred on by resolute wishes in such a way that, even though happiness is only moderate, courage nevertheless enlivens and cheers up everything. This results in the best joining and uniting of sounds in all of music.

78. The opposite of hope, so to speak, giving rise to a contrasting arrangement of notes, is called fear, dejection, timidity, etc. Fright and horror belong here too and if one thinks of them hard and has a strong mental picture of their natural characteristics, one can conceive very suitable musical passages.

79. Music, although its main purpose is to please and to be graceful, must sometimes provide dissonances and harsh-sounding passages. To some extent and with the suitable means, it must provide not only unpleasant and disagreeable things, but even frightening and horrible ones. The spirit occasionally derives some peculiar pleasure even from these.

80. Despair, which is the extreme to which cruel fear can drive us, requires, as one can readily imagine, the strangest extremes of sound for its natural expression. It can thus lead to very unusual passages [Fällen] and to the strangest, wildly disordered [ungereimten tollen] sequences of notes.

81. It remains to discuss pity. Since this consists of two main sentiments, i.e. love and sadness (each of which suffices in itself for the creation of moving compositions), it takes no little musical science to express it movingly.

82. Whether calmness [Gelassenheit] may be called a sentiment seems somewhat doubtful to me. A calm relaxed heart is really free of all extraordinary emotions and is quietly contented within itself. Still, this state has its peculiar characteristics and since it can be represented nicely and naturally by means of gentle unison-passages [Einstimmigkeit], a musician has to take note of it. While, by virtue of its very calmness, this quality is content to take its place at the end, the composer must rate it more highly than that.

83. We shall go no further in this exposition of sound, the natural science of music, the emotions, and how a composer must deal with them. The affects especially are like the bottomless sea; it cannot possibly be emptied, no matter how hard one may try. A book can present only the smallest part [of this subject] and much has to be left unsaid, left to everyone's own sensibility in this area.[14]

14. In two of the remaining six paragraphs of this chapter Mattheson refers the reader to a pair of other works on the subject of the affects. He lists his own Der musicalische Patriot (1728), p. 372, and

Concerning the Species of Melody and their Special Characteristics
(Selections from Part II, Chapter XIII)[15]

80. Just as in nature and in all creation bodies cannot be studied without being dissected, let me be the first to dissect a melody and examine all its parts. As a sample, we shall begin with the minuet, so that everyone may see of what it should consist if it is not to be a freak [Misgeburt]. This will demonstrate how one can learn to judge important things soundly by studying lesser ones.

81. Accordingly

I) le menuet, la minuetta [sic] whether it be made especially for { playing, singing, dancing,

has no other affect than moderate gaiety. Even when a minuet is only sixteen measures long (it cannot be shorter than that), it will have at least some commas, one semicolon, a couple of colons, and a couple of periods. Although this may be inconceivable to some people, it is nevertheless true.

82. In several places, if the melody is of the right kind, one can readily hear the emphases — not to mention accents, question marks, etc., which are not missing either.[16] The geometric as well as arithmetic proportions* are unavoidable parts of a melody and give it proper

---

a work by one Georg Abraham Thilo, a candidate for the ministry (Predigt-Amts Candidat). The manuscript had been submitted to him and he forwarded it to L. C. Mizler, editor of Die neu-eröffnete musicalische Bibliothek. Mattheson supposed, erroneously as it turned out, that it would eventually be published there. The title of the manuscript was "Specimen pathologiae musicae." Either the work had a subtitle or Mattheson translated the Latin very freely as follows: Ein Versuch wie man durch den Klang die Affecten erregen könne, i.e. "An Essay on how the Affects can be Moved by Means of Music." According to Mattheson the manuscript consisted of two parts, one on the emotions in general, the other on their treatment in music.

Die neu-eröffnete Bibliothek was a periodical published from 1739-1754 by L. C. Mizler who also founded the Society of Musical Sciences (Societät der musicalischen Wissenschaften) that Bach joined in 1747.

The last four paragraphs of the present chapter constitute an admonition to musicians, whose general ignorance Mattheson deplores.

15. It is unfortunate that so much of this chapter has had to be omitted, since in it Mattheson deals with style as well as affect. We include here only the most directly relevant parts. Since the paragraph numbering makes omissions obvious, they will not be otherwise indicated.

16. See Pt. II, Ch. IX, selections from which will follow.

* They are usually [respectively] called numeri sectionales and rhythmus.

form and measure. Let us show such an example of a minuet here that it may serve as a model for the dissection of all others:

83. This is a whole melodic entity (paragraphus) of sixteen measures, which become forty-eight when played completely.[17] The paragraph consists of simple sentences or periods which, like the following sections,[18] are extended by a third of the whole by means of repetition [of the first period]. They are indicated by three dots (⁖) under their final notes. The final ending, however, is indicated by the sign (𝄐) in addition to the period.

84. Not only is there a colon or member in this paragraph, but there is a semicolon or half-member as well. These can be recognized by their usual signs under the notes. There are further three commas, which become nine, and are indicated by their well-known little line. The threefold emphasis[19] has been indicated by as many asterisks.[20] Geometric proportion here as in all good dance-melodies is [in] four [parts] and has that many little crosses as its sign. The sound-feet [Klang-Füsse] of the first and second measures are repeated in the eleventh and twelfth, thus producing arithmetic unity. There you have the entire dissection into eight pieces. First, into two periods;

17. The translator believes that Mattheson's arithmetic was careless, since it is much more likely that the minuet would have a total of 32 or 40 measures. Were this not the case, the middle section would also have to be repeated. Mattheson himself says that "they [the sections] are extended by a third of the whole." This would indicate that the minuet has a total of 32 measures. However, in ¶84 Mattheson refers to a total of 9 commas. This would hold true only if the first section were repeated again at the end, thus bringing the total number of measures to 40. The reader must decide which of Mattheson's figures is the correct one.

18. This should be read to mean "... like the smaller sections described in the following."

19. See Pt. II, Ch. VIII selections from which will follow.

20. There are only two asterisks indicated by Mattheson. The missing one, however, is given in his errata-list.

second, into colons; third, into semicolons; fourth, into nine commas; fifth, into emphases; sixth and seventh, into geometric and arithmetic proportions respectively; and eighth, into the final period.

87. Next let us look at

II) the gavotta, which also has these particular kinds { for singing, solo or tutti, / for playing, da cembalo, / di violini, etc., / for dancing and abzielen.[21]

Its affect is truly jubilant joy [jauchzende Freude]. Its meter is even; it is not in four-quarter time, however, but consists of half-beats, whether divisible into quarters or eighths. I should like to see this distinction better observed, rather than that everything should be called common [schlechte] time, as is customary.

88. The hopping [hüpfendes] quality of the gavotte is its true property. It must never have a running character. Italian composers use a kind of gavotte especially written for the violin. With its excesses this gavotte often fills no less than entire pages; these pieces, however, are not quite as they ought to be. But whenever an Italian can do something to show off his speed, he will make anything out of anything. Certain gavottes that need much freedom are written for the keyboard too; these don't have the excesses of the fiddled ones, however.

90. A melody having a more fluid, smooth, gliding and connected character than the gavotte is

III) the bourrée { primarily for dancing; / for voice in the melismatic style.

This melodic species does not have so many subtypes or, rather, it has not gone yet to the excesses of the gavotte, although, occasionally, in theatrical and secular compositions a vocal aria, col tempo di borea, makes its appearance. How bourrées must be constructed, how they begin and end, may be found in more than one place. I must nevertheless say here that their quality is primarily contentedness and pleasantness; at the same time they have an unconcerned or relaxed quality; they are a little careless, comfortable, and yet not disagreeable.

91. The word bourrée itself means something filled, stuffed, settled, strong, important, and yet soft and gentle enough to be more suitable for pushing, gliding, or slipping than for lifting, hopping, or jumping. In the following respects the above-mentioned qualities of the bourrée-melody all agree, namely that they seem contented, obliging, unconcerned, relaxed, careless, comfortable, and yet pleasing.

21. The present literal meaning of zielen is "to aim." Mattheson's use of the term "abzielen" is obscure.

93. We continue by taking up

IV) the rigaudon { instrumental, for dancing, vocal.

Its melody is, in my opinion, one of the most pleasing. Its character is one of flirtatious pleasantry [tändelden Schertz]. The Italians often use the rigaudon for final choruses in dramatic compositions. The French use it particularly for odes and vocal ariette. Its form may be seen in the Orchestre[22], but I must add that its third period [Absatz] should be like an insertion or parenthesis, as if it did not belong and were present only by accident. For this reason the third little period should also be rather low in pitch and have no real ending, so that the following reaches the ear with renewed freshness.

94. The rigaudon, by the way, is a real hermaphrodite, part gavotte, part bourrée. Everything about it, its sections, its circumference [Umfang], and its alternation, however, are quite different. In older times this dance melody was simply called rigo by the Italians.[23] ...

95. Our next examination concerns the march or

V) la marche, which can be either { serious or droll [possierlich].

Its true character is heroic and fearless, yet it is not wild or running. It is therefore wrong to make marches out of any sort of melody. Dozens of composers seem to think that a march can never be gay enough. But, while it must not be plaintive, sad, pathetic, or tearful, a jumping quality is, on the other hand, equally out of place. A march is not really a dance. When it is used in the theatre the performers walk quite slowly; they do not dance, hop, or jump. They do form figures that are pleasant to watch, especially when they are formed by armed persons or warriors.

96. Triple time does not interfere with the seriousness of such melodies. Lully has set many marches in uneven meter, without, however, depriving them of their pride and war-like character, to which he paid much attention. The composer must form his picture by thinking of a hero. Too much fire does not make a real hero. Rather he is completely fearless, with a firm spirit that is unseated or shaken [bewegt] by nothing. Such a spirit is swayed neither by clever arguments nor by heated passions.[24] The picture the composer should bear in

22. Mattheson, Das neu-eröffnete Orchestre (1713).

23. The origin of the word rigaudon appears to be quite uncertain. Curt Sachs in his World History of the Dance (1937), p. 411, believes that it must have some relationship with rigodone, rigolone, Italian words for "circle dance."

24. The two sentences describing heroic character are freely translated according to the meaning which, the translator feels, is

mind is not that of a raging fire but of courageous warmth.

97. There are some occasions when the march, too, changes its quality. If, for example, I wanted to introduce a group of harlequins or clowns with a serious melody, it would be an inconsistency. In such cases, the more ridiculous the march, the better. This requires a special quality [Abzeichen]. If I am not dealing with satirical characters but with brave soldiers, my march must be somewhat staid and express fearlessness.

98. This music, so useful for the march and the watch, has a close relative that is nevertheless a distinct species in

VI) the entrée.

The entrée must always be of an elevated and majestic character, without, however, exaggerating these qualities. For, the entrée has a sharper, more dotted, and pulling quality than any other melody. In this respect the evenness of the march is absent or at least, to some extent lost. The predominant characteristic of the entrée is severity [Strenge] and its purpose is to arouse the attention of the audience to expect something new and strange.

102. We shall let something fresh and quick follow these serious melodies, namely,

VII) the gigue { the ordinary [gigue], the loure, the canarie, the giga.

The special quality of ordinary or English jigs is hot and hurried eagerness [Eifer], anger that soon evaporates. The loures or slow and dotted gigues, by contrast, exhibit a proud and pompous character, which makes them very popular in Spain. The canarie must have a very desirous quality [Begierde] and quickness, but it should be somewhat simple-minded. The Italian giga, finally, is not a dance at all, but is written for the violin (which may account for its name[25]). It is generally forced into extreme speed and flightiness, but it is fluid and not abrupt, somewhat like the smooth rapid flow of a brook.

103. All these remarks are aimed not so much at an understanding of particular dances as at the complete comprehension of the wealth contained in them and the clever use of this wealth. They are useful in many compositions that are seemingly of a more important nature, especially in tasteful vocal music and in the expression of all kinds of passions. The incredible ideas that may flow from these unassuming sources are countless. Bear this remark in mind!

---

buried in rather obscure language.

25. Mattheson is making the absurd assumption that Italians would name a musical form (let us accept his rejection of the giga as a dance) after the specifically German name for the violin, Geige.

104. There are ariette in tempo di giga, just as there are ariette based on the other species of melody. This applies to the very effective loure type of gigue especially. With nothing more than the gigue I can express four important affects: anger or eagerness, pride, simple-minded desirousness, and flightiness. The simplicity of the canarie is emphasized by the fact that all four phrases and repetitions must end on the tonic and in no other key.

105. Let us not forget

VIII) the polonoise {in even and uneven meter.[26]

It is hard to believe how useful for certain things this species of melody is in vocal music, not however, in its own form but on a Polish foot.[27] So far as I know, no one has ever described it.

---

26. "Not until the beginning of the eighteenth century does [the polonaise] seem to have freed itself from the duple time of the old quiet gliding 'introductory' dance." Sachs, p. 425.

27. The original sentence is not clear at all; "... nicht zwar in ihrer eigenen Gestalt sondern nur auf dem polnischen Fuss." It is a peculiar way of saying what the translator believes to mean "not the form of the polonaise but the rhythm." In order to investigate the rhythm of the polonaise in Mattheson's time, the translator looked at a number of examples and found that the only general statement that it is safe to make is that all polonaises start on the downbeat. Most of the specimens examined were in 3/4 time and exhibited a variety of rhythmic patterns some of which are given here:

106. While the Polish way of dancing is not unknown, not everyone realizes that its rhythm in even meter is predominantly spondaic.* Unlike any other melody, especially melodies in unison [im fortgesetzten unisono], it even closes spondaically. In odd meter the spondaic rhythm becomes iambic. Thus, in the former there are two equal values or half-beats per note, in the latter a short and a long, namely a quarter and a half note (on one tone also[28]). I say predominantly because these feet are sometimes mixed. This can be seen in examples.

107. The beginning of the polonoise is unusual in that ... it starts with the downbeat in both even and uneven meter.

108. If I had to set openhearted and frank words to music, I should choose no species of melody other than the Polish one. In my opinion, this is its quality, character, and affect. A people's character seldom remains hidden in its entertainment and dances, even though it might on other occasions.

109. Another particular species of melody that gives rise to unusual invention and is useful in many styles is

---

* See Ch. VI, ¶ 17 of Pt. II.

28. This statement applies only to phrase endings of the polonaise as may be seen in the following examples of polonaises written by Mattheson as examples of variations derived from a chorale melody (Pt. II, Ch. VI, ¶5, pp. 162, 163).

IX) the angloise, the English dance which includes { country dances, ballads, hornpipes, etc.[29]

How much is excellent and yet strange in these dances may be seen in those little books published from time to time by Jeanne Roger in Amsterdam[30] which contain collections of them. Everyone can inform himself about the shape of such melodies by looking at those collections. There one may see that they [the above dances] do not just consist of notes that push along [rücken] but that they have a much more extensive range than that [(dass sie) viel weiter um sich greiffen], and have lovely flowing melodies. ...

110. The chief characteristic of the angloise is, in one word, obstinacy,[31] accompanied, however, by unlimited generosity and noble good-heartedness. To those who wish to express these affects, especially the first, the examination of these melodies is recommended. They will learn from them and find in these country dances the basis of the dance style.

113. To the fast melodies belongs further

X) le passepied { in a sinfonia[32] or for dancing.

Its character is close to frivolity for, in the unrest and fickleness of the passepied, one cannot find the eagerness, anger, or heat expressed by the gigue. Nevertheless, it is a kind of frivolity that is neither hateful nor unpleasant but rather agreeable. Like so many women, it retains its charm in spite of a somewhat fickle character.

115. The kind of passepied used often in secular sinfonie changes its form somewhat, depending on the preceding and following movements in these instrumental pieces. It serves as an allegro or an additional fast movement. Italian composers frequently end their sinfonie with this kind of dance. The French, on the other hand, use the passepied only to exercise their feet. There is nothing to keep us Germans from using at least the rhythm, if not the form, of the passepied whenever it happens to match the desired emotion of the moment.

116. One must not confuse the term "a round," used by drunkards,

29. In English in the original.

30. Jeanne Roger was the daughter of the well-known publisher E(s)tienne Roger of Amsterdam. She (with Le Cène ?) continued the firm after her father's death.

31. Eigensinn is used in the sense of "obstinacy" in modern German. This does not, however, exclude the fact that it may have had a meaning, or at least a connotation, closer to the words of which it is made up, i.e. "own mind," in the sense of "independence." In present-day usage Eigensinn carries an implication of "eccentricity" or "capriciousness."

32. Mattheson uses Symphonie throughout this section.

with our species of melody which, because of its return after making the rounds, is called

XI) the rondeau either in { even or odd meter. ...

117. As far as I know, this kind of melody, a description of which may be found in my [edition of] Niedt,[33] is not often used for dancing. It is somewhat more prevalent in vocal pieces, but has its chief use in instrumental compositions [Instrumental-Concerten]. It seems to me that a good rondeau is ruled by steadfastness or rather by steadfast faith.[34] This state of emotion is certainly best represented by the species under discussion.

118.

XII) The sarabande and its kind { instrumental, vocal, and for dancing.

This species expresses no passion other than ambition [Ehrsucht]. There are, however, the following differences between the kinds listed above: the dance sarabande must be even more narrow [-minded?] and bombastic [enger und hochtrabender] than the others. There must be no passages of runs, since grandezza despises them and insists on seriousness.

121. As everyone must know, there is a species of melody for instruments, voices, and the dance called

XIII) the courante or corrente. There are courantes { for dancing, for keyboard or lute, for the violin, for the voice.

When the courante is meant to be a dance, it has unbreakable rules that the composer must observe precisely. He may look them up in the [Neu-eröffnete] Orchestre and in Niedt, etc. Only 3/2 time is permissible here.

122. If the melody is to be played on the keyboard, it may be freer. On the violin (not excluding the viola da gamba) it can hardly be said to have any restrictions except that it must justify its name by constant running. It must always remain lovely and tender, however. The vocal courante is closest to the dance-courante, although it actually maintains only the tempo di corrente, not the entire form.

123. The pièce de resistance [Meisterstück] of the lutenists, especially in France, is usually the courante and the art and effort it requires are admittedly not wasted here. The passion or affect to be ex-

33. Friedrich Erhard Niedt, Musicalische Handleitung zu Variationen des Generalbasses, ed. by Johann Mattheson (1721).

34. Vertrauen might also be translated as "confidence."

pressed by the courante is sweet hope. The melody contains much that is courageous, yearning, and happy, all the elements that together make up hope.

124. Since no one has ever said or even thought this before, it might be assumed that I am looking for something that is not present in the thing itself, that I am inventing all this. However, I can demonstrate concretely that the above three particulars and the resulting affect can and must be found in a courante. Let us select an old well-known melody, not only because the new ones depart from the rule, but because it may be claimed that I wrote them to prove my statements. I am sure that lovers of the lute will find my statement corroborated in their courantes as it is in the following one.

125.

Courante: "Hope"

126. Up to the first half of the third measure, marked by a cross, there is something courageous in the melody. From there to the first half of the eighth measure, marked by a similar cross, yearning is expressed, especially in the last three and one half of these measures and by means of the repeated cadence to the fifth below. Finally toward the end, i.e. in the ninth measure, there is some joy.

128. In compositions for keyboard, lute, and viola da gamba XIV) the allemande, a real German invention, precedes the courantes, as the courante precedes the sarabande and gigue. This sequence of melodies is called a suite. The allemande is gebrochen[35], serious, and in

35. The literal translation of this term would be "broken work." It most likely refers to arpeggiated or highly ornamented variations of

well worked-out harmony, it represents a contented or happy spirit which takes pleasure in calm and order.

130. Instrumental music has a particular species of its own called

XV) the aria with or without diminution [Verdoppelungen] called partite by the Italians and doubles by the French.

This instrumental aria may be properly used for the keyboard as well as all sorts of other instruments. It is usually a brief two-part, singable, simple melody, often stated simply only in order that it may subsequently be made complicated, disguised and altered in countless ways. Thus one can show off virtuosity while maintaining the bass-progressions [Grund-Gänge]. The affect of the aria may very well tend towards affectation; even so, this most simple and basic melody may be used for several different emotions.

132. There is another species (I do not know whether to say of melody or of musical eccentricity) to be found in instrumental music. This one is different from all others. It is called

XVI) fantasia or fantaisie* and has these kinds { boutades, capricci, toccate, preludes, ritornelli, etc.

Although it is best that all these forms appear to be improvised, they are, nevertheless, committed to paper. They keep within few limitations, however, and have so little order that one can hardly call them anything other than good inventions. Hence their affect, imagination [Einbildung].

133. The largest among the dance-melodies is probably

XVII) the ciaconia, chaconne, with its brother or sister, the passagaglio [sic] or passecaille. ...

134. The chaconne is both danced and sung, sometimes simultaneously. When dance and song alternate with each other, the chaconne gives a certain amount of pleasure. However, it always produces satiety rather than a pleasant taste. Everyone knows how easily satiety gives rise to disgust and loathing, and he who wishes to achieve this

---

a melody.

* See Pt. I, Ch. X, §§88-98. [In this section Mattheson says that the fantastic style is used mainly in the theatre, although not exclusively there. He also gives a number of examples of fantasia-beginnings and lists some composers who have written in this style.]

affect need only make a couple of chaconnes in order to attain his goal.

136. Since the Italians do not care for ouvertures, they have introduced another species to take its place, namely,

XVIII) the intrada.

Its affect is to awaken a desire for more,* since, usually, as an introduction it promises more about that which is to follow. Whether this promise is always kept is another question. To describe the characteristics of the intrada further here would be redundant. Brossard, Walther and the [Neu-eröffnete] Orchestre say enough about it.

137. A much more distinguished position among the instrumental melodies is occupied by XIX) the sonata, for several instruments or for a solo instrument — for the transverse flute, for example. Its purpose is mainly to oblige and to give pleasure. What must rule in the sonata is a certain complaisance, ready to do anything, and of service to every listener. A person who is sad will find in it something plaintive and sympathetic; a sensualist will find something pretty; an angry person can find violence, etc., in the various movements [Abwechselungen] of the sonata. The composer who keeps this in mind in his adagio, andante, presto, etc., will succeed.

139. The greatest number of voices is required by the so-called XX) concerto grosso, an instrumental piece for strings [Violinen] only. Vivaldi, Venturini[36], et al., have published quite a few of these as may be seen in the Amsterdam music-index.[37] The affects of the grand concerto are manifold and of an alternating type, as in the case of the sonata. There is not such frequent alternation, however. Sensuality reigns in a concerto of this type. Much depends on the fullness of the orchestra; this is, in fact, often carried to such excess that it resembles a table laid for show rather than to satisfy hunger. Everyone can easily guess that contests, as in all concertos — from which, in fact, they derive their name —, are not lacking. Thus jealousy and revenge, envy and hatred, and other such passions are represented in the concerto.

---

* The orators call this captio benevolentia.

36. Probably Francisco Venturini, d. 1745.

37. This "music-index" [Music-Verzeichnisse] may very well be a reference to a catalogue published by the associate and successor of Etienne Roger, Michel-Charles Le Cène. According to Fétis (Biographie universelle ..., 1867-73, Vol. VII, p. 293), two such catalogues are known. Of these the second of 72 pages is probably the one in question. Its title was, according to Fétis, Catalogue des livres de musique nouvellement imprimés à Amsterdam chez Estienne Roger ... . Fétis says that the catalogues are undated; however, Edouard Gregoir (Documents historiques relatifs à l'art musical et aux artistes musiciens, 4 vols., 1872-76) says that their respective dates are 1716 and 1732. He does not, alas, document these dates.

140. A more moderate species is

XXI) the sinfonia / symphonie — da chiesa, in the church, / di [sic] camera, in the chamber, / del drama [sic], in the opera.

These, although they too demand a full orchestra, may not be as full and luxuriant as the grand concerto. For even though the sinfonia opens the most distinguished operas [Sing-Spielen], while the intrada opens the lesser ones, it must not have a sensual character. In the church it must be even more modest than on the stage or in the chamber. Its main characteristic consists of giving a brief glimpse of what is to follow. It may thus be concluded, that the affect to be expressed in a sinfonia must be according to the passions that predominate in the rest of the work.

141. We shall finish this pile of species with

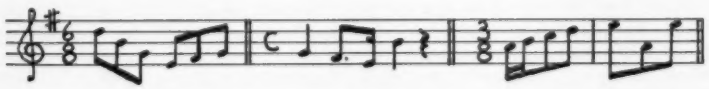
XXII) the ouverture.

Its character must be noble, and it deserves more praise than we have room for. A description may be found in the [Neu-eröffnete] Orchestre.

Concerning Melodic Invention
(Selections from Part II, Chapter IV)

14. The first factors to be considered in musical invention are thema, modus, tactus, i.e. subject, key, and meter. These must be well-chosen and established before anything further may be considered, whatever one intends to do.

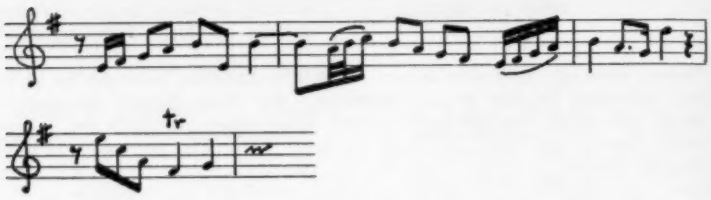
15. The themata or subjects are the musical equivalent of the orator's text or thesis [Unterwurff] and one must have a store of particular formulas that can be used in oratorical generalization.* This means that, by experience and attentive listening to good music, the composer must have collected moduli[38], little turns, clever passages, and pleasant runs and jumps. While these all consist of a number of single parts, they become whole by means of suitable combination. If I had in mind, for example, three different and independent passages:



* Specialia ad generalia ducenda, as the orators say.

38. Mattheson uses the German form of the word "Modulation." Obviously, a translation of this term by its English cognate would be misleading, since he is not speaking of modulation in the present meaning of the term. In 19 below, he uses the Latin word moduli (sing. modulus) from which he seems to have derived the German cognate even though the latter points to modulatio. Walther (op. cit. p. 409) lists

and wanted to make a connected phrase out of them, it might look like this:



16. Although one or two of these passages or turns may have been used by several masters before, they come to me without thinking of any particular composer; in fact, I may not even know him. Putting them together gives the whole phrase a new appearance or form, which may be considered an original invention. It is not essential that one try to do this intentionally, it can happen quite spontaneously.

17. One must not use these devices in such a way that one has an index of them and that one treats them, in an academic manner, like a box of inventions. Rather, they should be considered in the same way as the vocabulary and the expressions used in speaking. We do not put these on paper or in a book, but keep them in mind and by means of them we are able to express ourselves in the most comfortable way without constantly consulting a dictionary.

18. If one desires and needs to do this, one may, of course, make oneself a collection of all the fine passages and moduli that one has ever come upon and by which one has been pleased. They can be divided into chapters and given titles so that, if need be, one can gather counsel and consolation from them. However, lame and patchy things will result from this laborious and deliberate piecing together of such fragments, even if these fragments be silver and gold.

19. Just as such stored special moduli as we have discussed aid in the construction of a subject, certain general parts of the art of invention lead to parts that are more particular ones. One can make unusual use of many ordinary and well-known devices. Cadences, for example, are quite common [allgemein] and may be found in every piece. When, however, they are used at the beginning of a piece, they become something special, since they normally belong at the end.

20. All this is of concern in the invention of a good thema which we call subject and which demands the greatest art or skill. Key and meter, on the other hand, while they must be carefully chosen, are not of equal importance. Thus, although we shall give some lessons con-

---

the following definitions for modulus: "... 2) a certain passage, and 3) a musical formula [Förmelchen]."

cerning the latter two problems, we shall first dwell at some greater length on the "subject." The loci topici[39] (although I do not ordinarily consider them too important) are occasionally very fine aids to invention, in music as well as in poetry and rhetoric.

21. How much these loci help the imagination of the composer is told in detail in Heinichen's new and thorough directions, pp. 30-38.[40] It must be remembered, however, that they are of no particular help to the ungifted musician. For further material about these loci which preferably should be called dialectical rather than topical[41], see Vorbereitung zur Organisten-Probe, p. 1.[42] They are also called "sources of invention." While Weissenborn* names only eleven of the most common ones, he says many valuable things about them.

22. Many who cannot bear anything that is even slightly academic, hold these loci in utter contempt. They do not consider how useful and advantageous they can be, particularly when the other materials are in themselves fruitless and the spirit for free invention is lacking. No one should feel guilty about resorting to the following fifteen aids to invention; they are preferable to plagiarism. Why should those who do not need this help forbid it to others?

23. Here are the names of the loci: locus notationis, descriptionis; generis et speciei; totius et partium; causae EFFICIENTIS, materialis, formalis, FINALIS;** EFFECTORUM; adjunctorum; CIRCUMSTANTIARUM; comparatorum; OPPOSITORUM;*** exemplorum; testimoniorum. We shall explain them.

24. Although it might be supposed that these things can be applied to music only by force, the following will convince everyone not only that they are quite natural, but also that they ought to be considered part of the doctrine of invention. No one has made a real attempt at this. The fact that all the dialectical loci are equally suitable and

---

39. The use of the rhetorical term loci topici here immediately makes clear that the term "subject" which the translator has used for thema or Hauptsatz is preferable to the word "theme" which has, in the translator's opinion, more musico-formal connotations. Mattheson is applying the ars inveniendi of rhetoric, and the musical subject he is speaking of may not mean "subject" as in a fugue; rather it seems to mean "subject" as in a speech. The concepts, at any rate, constantly overlap, so that a more ambiguous term is actually the more desirable one.

40. Der Generalbass in der Composition, Pt. I., Ch. III, §63.

41. Mattheson suggested the term "dialectical" loci in order to avoid the pleonasm of locus and topicus (cf. supra). See also A. Schering, "Geschichtliches zur ars inveniendi in der Musik," Jahrbuch der Musikbibliothek Peters (1925), pp. 25ff.

42. Mattheson's Grosse General-Bass-Schule (1731), p. 1.

* M. Weissenborn, Gründliche Einleitung zur teutschen und lateinischen Oratorie, [1713], p. 223.

** These four loci are sometimes considered as one.

*** This locus is sometimes considered the same as the preceding one.

equally important has never been pointed out before [with respect to music] so that this is the first attempt to deal with them to any great extent [in relation to that art].[43]

25. The first place,[44] namely notatio, is almost the richest source of invention. Since notare means "to write" [bezeichnen],[45] we understand by notatio the outer form and appearance of the notes, in the way in which letters of a name or thing are understood in rhetoric. This can give rise to many ideas. The place and form of the notes, the sound-letters, lead us with much ease and suitability to virtually countless alterations. The following four means should be noted: 1) the time-value of the notes, 2) the interchange or exchange [of notes], 3) repetition and answer [Wiederschlag], and 4) canonic imitation.

26. It is hard to believe, yet true, how large the scope of this device is. For the time-value of the notes is the only apparent root of well-fashioned obbligato-basses.* These are composed sometimes of one, sometimes of several note-values.

27. If, for example, I write my theme or subject entirely in eighth- or quarter-notes without any further specifications, so that there are no different feet (rhythmi), I am committed to this [i.e. to continuing in this fashion.] If on the other hand, I use two or more note-values, different alterations will result, especially when meter and key are brought into play. The art of exchanging [Verwechslungskunst] (ars combinatoria) may serve here if it be desired. More will be said about this under Rhythmopoie.[46] While I do not expect that any miracles will result from this art, I refrain from attacking the opinion of those who favor this procedure.[47]

---

43. The last part of this paragraph is not very clear and the translation is largely conjecture.

44. Mattheson uses Ort, the literal translation of locus.

45. The translation "to write" is used for the sake of simplicity both for the Latin notare and for the German bezeichnen. As the context shows, the term (whatever the language) refers to the physical aspect, the appearance of writing.

* An obbligato-bass is one that is obliged always to allow certain prescribed notes to be heard. [The term means ostinato here. This is not only apparent from Mattheson's statement but is the definition given by Walther (op.cit., p.447): "... This term [obbligato] is used for thorough-bass when it [the bass] is limited to a certain number of measures that are constantly repeated, as happens in Ciaconen, or when it retains a certain mouvement or only certain notes, etc."]

46. Part of this paragraph is somewhat obscure. In the chapter of Rhythmopoie (VI, Pt. II), Mattheson does not specifically mention ars combinatoria which apparently has to do with variation. He does give examples of variation, deriving several dance melodies from chorale melodies. Schering (op. cit., p. 28) defines ars combinatoria as the art of combining different musical figures into themes or subjects and points out how mechanically this was sometimes done.

47. A literal translation of this sentence, "I do not wish to attack the mechanical opinion of others," was avoided, since it would be incor-

28. Inversion is known under the technical name [Kunst-Nahme] evolutio or eversio. Since the notes change only in respect to their position, inversion does not involve any change in the form and time-value of the notes but consists, in this case, of causing notes that previously rose to descend and of causing notes that previously descended to rise; or of changing forward motion to backward motion, etc. These procedures often result in very nice inventions. What else evolutio may mean in other cases will, without fail be reported in the proper place. In the meantime we have given the second manner of invention under this heading.[48]

29. The third manner to which we are led by the notational source [of invention] consists of repetition, for which the technical name is clausula synonyma. In fugal pieces it is called "the answer," i.e. a certain phrase is transposed higher or lower.[49]

30. By this device many pretty themes or subjects are invented (not only for fugues, but even more for other things). These may be carried through or developed [durch- oder aus-geführet] very cleverly. It is especially effective when a repeated phrase takes turns with other intervening ones and is cleverly brought back afterwards so that its return seems to be inevitable.

31. The answer is called repercussio when one voice does not merely repeat the same sounds uttered by another, but answers them in the same form either higher or lower. This can happen within one voice as well. The ear loves almost nothing better than such a return of a subject that has already been heard, especially when this is brought about cleverly so that it appears when it is least expected. That [pleasure] is natural, and all pleasures of the senses are of the same natural character.[50]

32. The fourth manner in which the category "place of notation" leads us is taken from the canonic style and is uncommonly dignified, if one does not limit oneself too much in using it. What actually constitutes this style has been discussed in Part I;[51] however, the meaning of canons, how many kinds there are, and how they are made will be shown more extensively in Part III.[52]

33. Here, while discussing the doctrine of invention, we are not dealing with formal canons but must limit ourselves to canonic imita-

---

rect English.

48. Locus notationis.

49. Wiederschlag, here translated as "answer" can mean fugal answer (comes) or sequence as will become apparent below in § 31. Although the term "sequence" does not appear to have been used to describe the repetition in one part of a musical phrase on another pitch until towards the end of the eighteenth century, the translator will apply it wherever it is indicated by the context.

50. This sentence has been rather freely translated.

51. Ch. X.

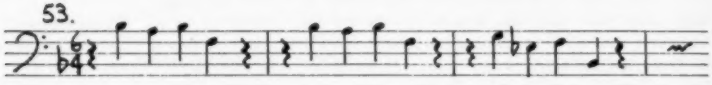
52. Ch. XV.

tion, in which the voices follow one another as far as note-values and intervals are concerned, but with freedom of pitch [Ton].

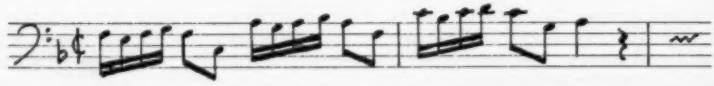
34. This, in brief, constitutes the explanation of the first dialectical place or of the first source of invention and its four openings or pipes, through which mere notation not only aids in the formation of a subject, but is able to carry it quite far.

35. It will be useful to give a small example of each of these four types. In this way we shall have a model to show us the procedure with the remaining loci. A sensible reader can easily surmise that it would require a fatter volume than the present one if we were to give similar examples of all the fifteen loci.

36. Invention of a subject.
with notes of the same time value



with notes of different time values

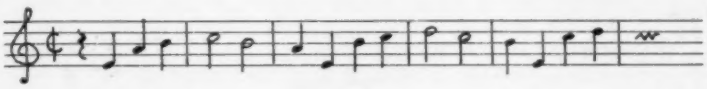


By Inversion

37. In this manner all subjects may be inverted and ideas that are strangers may be lured into a closer relationship. One must beware of making daily routine out of this, however; it can easily take on a forced character.

53. The original time-signature is 3/4.

38. As far as imitation or answer is concerned, the agreeable services it renders to invention must be well known to all who have looked about understandingly in musical scores. It is easier to find ten examples than one. We shall limit ourselves to one, however:



39. All that is pleasing in this example lies in the imitation of the first five [sic] notes, which exhibits the symmetry or evenness of the sequence [Wiederschlag], once by means of a second, and once by means of a third.

40. This device is of even greater use in the bass [in bassierenden Sätzen] than in the upper voices. In the working-out of fugues as well as of all melodic species[54] it is simply indispensable. A good subject must lend itself to transposition by any interval if the composition [Gesang] is to have form and if its parts are to be on a friendly footing with one another.

41. As we pointed out above, one must not limit oneself, in this case, to literal answers as in ordinary fugues. Rather one may deviate in one manner or another, especially with respect to the intervals. In that way it [the use of the device] will seem to be casual and spontaneous and result in something better. This is all the truer inasmuch as forced and too frequent literal imitation tends to annoy rather than please the ear.

42. Let the following serve as an example of the fourth manner, i.e. canonic imitation for two or more voices. As we have seen, imitations and answers can take place in a single voice; the canonic style, however, must have more than one voice. We shall close the explanation of the loci notationis with this example, since otherwise we should stray too far from our path. At 1) canonic imitation is abandoned; 2) is an answer in its true form [real answer];[55] at 3) there is canonic imi-

54. Melodische Arten. One might be led to suppose that in this context Mattheson means "contrapuntal style" when referring to melodic (in contrast to harmonic) species. The translator tends to believe that Mattheson simply means "in all music!"

55. The use of the term "answer" throughout this chapter is far from an ideal solution. The difficulty does not, however, lie in finding a better English equivalent (although that too is a problem); rather it lies in the indiscriminate use Mattheson has made of the term Wiederschlag. There is no doubt that the word meant "answer" to him, since he explains this himself in Pt. III, Ch. XX, § 10, 11, and 12. In the interest of whatever clarity may be gained by this the entire section is translated here.

"In French, réponse; in Italian, risposta really mean 'answer!' In fugues and fugato pieces the part [Nachsatz] that follows the first part [Vorsatz] and, as it were, answers it, is figuratively called by

Oboe
Voce
1
2
3
4
5
tr

tation at the unison; at 4) a pulling together of this succession called appropinquatio thematis; at 5) a ribattuta ending in a trill.

43. The second place of invention, namely, locus descriptiones, is, next to the first, the richest source. In my humble opinion, in fact, it is the surest and most essential guide to invention, since it contains the bottomless sea of the human sentiments which, by means of this locus, are to be represented and described in music. Because of the manifold and mixed nature of the passions, however, one cannot list as many clear and particular rules for the locus descriptiones as for the preceding one.

44. The most important aspects of the emotions have been discussed in the third chapter of the first part. There, under the title "The Natural Science of Sound," they can be looked up and then applied to the art of invention.

45. The assumption that the locus under discussion depends on the character of the words to be set to music is not far from right, since the so-called text of vocal music serves chiefly to describe affects. However, one must know that even where there are no words, in purely instrumental music, in fact in any melody, the purpose must be that of picturing the governing sentiment. Thus even the instruments can speak intelligibly and understandably, by means of [nothing but] their sound.

46. The famous Neidhardt says in his Temperatur,[56] "the purpose of music is to stir all the affects by nothing but sounds and their rhythm and thus to outdo the best orator." This belongs to the locus descriptiones of invention.

47. In writing instrumental music (which, on the whole, has a style all its own) the composer may sometimes write according to some

---

this name. In Latin it is called repercussio, in German Wiederschlag.

"That only the answering voice or chorus of a dialogo should be called thus, as Walther's dictionary maintains, I had never heard before. I believe that the above-mentioned figurative meaning of this word has a far greater application than the literal meaning....

"Brossard has intentionally placed risposta and other expressions under the heading fuga; however, for the word repercussio he gives a meaning much too general to be clear. Nowhere does he make special mention of réponse and risposta; he does not define them [separately]. Instead he makes mixed use of reditta, replica, consequenza, imitatione, etc., without mentioning that there are differences between these words, particularly between 'fugue' and 'imitation.' We gladly take his word for it. Rameau uses the word réponse twice in the same sense in which we use it. (Traité de l'Harmonie, p. 336.)"

Translator's note: Walther limits the term repercussio — also translated by him as Wiederschlag — to the meaning of "tonal answer," p. 520f. and example on table XIX, fig. 8.

56. J.G. Neidhardt, Die beste und leichteste Temperatur (1706).

special emotion of his own invention; in vocal pieces it is the poet who, if he is good, usually determines the affect. This is a supporting reason for one of my axioms, namely, that it is easier to write for singers than for players. It requires much more feeling and sensitivity to express one's emotions without prompting than to follow the suggestions of someone else.

48. The remaining loci, whether generis or speciei, totius et partium, etc., are also useful to musical invention, as we shall soon see; they are, however, not as important as the preceding two.

49. It is, therefore, not a good philosophical teaching method if, in discussing these matters, notation and description are not mentioned at all, and if one restricts oneself only to that which precedes, accompanies, and follows (antecedentia, concomitantia, and consequentia).[57] Aside from the fact that these elements are not real loci topici at all, unless they be considered as belonging to acting and circumstantial causes, and to the final cause (ad causas efficientes, circumstantias, et causam finalem), the two above-mentioned loci are ten times more serviceable to invention than the three latter. In fact, the least of the remaining thirteen places is of greater advantage than those supposed sources [of invention].

50. Counterpoint is a genus, an entire generic group in music; the fugues, however, are species, kinds, or sorts. A solo is a genus, a violin solo, a species, etc. Thus, this or that genus, if it agrees with the words [of a text] or the intention [of instrumental music] can be of help [to invention] in a general way. Sometimes, too, this or that species of melody can be a more specific or particular guide to invention.

51. All musical pieces consist of different parts that are joined together. If I give thought to this matter, I must consider whether words or intention are suitable for a solo or a tutti, for choir (which consists of many members), or for duet or trio. Should it appear best to make a tutti out of the work, the question becomes: of how many parts, since there are C.,[58] A., T., B., etc.

52. The requirements (requisita), such as the different instruments and their appropriate uses, also depend upon the locus partium, and each voice and each instrument or, as they are called, each part, according to its nature and compatibility with the material, gives rise to characteristic inventions.

53. The acting cause (causa efficiens) is an oration in which some action or story is to be narrated, provides aid to invention in four ways, for it is either a main cause, an instrumental cause, a driving cause,

57. A criticism of Heinichen who lists these "loci topici" as the three fontes principales, the three main sources of invention. Cf. § 78 below.

58. Cantus.

or an incidental cause.* The nature of these causes is easier to observe in a text set to music than here, where any description would have to be brief and could at any rate, only be verbal. It would carry us too far [to attempt more], and this paragraph will have to serve as a notice or bit of instruction.

54. The material cause (causa materialis) consists of three elements, out of what, within what, and for what[59] (ex qua, in qua, et circa quam). In order to explain this briefly, it must be assumed that the basic material of music is sound, that is, if we disregard the fact that it may have a text or that a particular passion is to be expressed by it.

55. If, for example, I were to write harmony consisting of consonances exclusively, without any dissonances, the material out of which (ex qua) my composition consisted would have a very individual character and would be a special invention.**

56. On the other hand, while it is not possible to make a pleasing composition entirely out of dissonances, it is nonetheless feasible to use them so frequently that they virtually lord it over the consonances. The impression will then be created that the latter have been left out entirely.

57. One can, for example, write a bass in such a manner that at each new phrase the vocal part begins on a second, or — proceeding the other way — the vocal part is written in such a manner, after each phrase followed by a rest, that it allows the bass to begin again on a fourth or sixth from the vocal part.[60] This will sound as agreeable as it will seem strange. It belongs to the causa materialis, i.e. out of what.

58. It is also possible to picture horrible and gruesome things by the use of dissonances and thus to take one's invention ex loco materiae. In depicting poetic verses dealing with hellish furies, plagues, etc., one can use a symphonie terrible. In such cases nothing is so horrible that it will not be convenient and suitable to our invention.

59. Just as ideas may be derived from either dissonance or consonance, a variety of skillfully contrived interchanges between con-

---

* Principalis, instrumentalis, impulsiva et accidentalis causa.

59. To translate womit or the Latin circa quam as "for what," is justified, the translator believes, by the context below, particularly since the Latin word circa is capable of a variety of meanings.

** At certain times and under certain circumstances this way of writing is most effective. Capellmeister Hasse, an old friend of mine, has often demonstrated that true agreeableness lies least in the use of dissonances.

60. The reason why Mattheson mentions the sixth in this context, i.e. as if it were a dissonance, is not clear. Elsewhere (cf. Pt. III, Ch. VIII) he treats the sixth conventionally as an imperfect consonance. The mention of it in the above context may be an error.

sonance and dissonance can lead to the derivation of many more inventions.

60. The materia in qua or the material within which one writes [the ideational framework],[61] belongs partly to the underlying idea, text, or the particular passion one has chosen to represent. It is, therefore, related to some extent to the locus descriptiones though, as may be easily surmised, there are exceptions.

61. The materia circa quam [the material] with or about which the composer thinks while writing, are the voices or the instruments; [i.e.] the singers, players, and especially the listeners. The varying ability and cleverness of all of these offer an extraordinary stimulus to the composer's inventiveness. They are of greater help [to invention] than almost anything else.

62. Ten good composers are frequently unable of making one good singer, but one good singer, especially a beautiful and artistic female, may awaken ten good composers who are often unaware of the origin of their remarkable ideas. Love is often a contributing factor, for love, although it does not teach rules, is frequently the best teacher of music.*

63. For this reason the materia circa quam has always been regarded as one of the best aids to invention. The knowledge that a work is to be performed by this or that great virtuoso, or that it is to be put on by such able people that writing for them is the greatest pleasure, is usually an enticement or stimulus to the composer.[62]

65. Next, the form and norm of every work and every melody show the way to the invention of clever passages [Gänge]. Concerning this, more extensive instructions will be given in the two chapters dealing with the difference between vocal and instrumental melodies and their kinds and styles.[63] They [the stylistic differences] can be applied to the doctrine of invention and may be regarded as causae formales.

66. The goal [Endzweck i.e. causa finalis] of our musical endeavor is, first, to honor the Lord and second, to please and move the listener. ...[64]

70. This is the proper place for the locus effectorum. We may notice, for example, that certain compositions are very effective in rooms or halls, but lose their power entirely when performed in a

---

61. The lack of clarity in the above paragraphs appears to the translator to be caused by the rather forced application of rhetorical terms.

* According to the old proverb: amor docet musicam.

62. One paragraph omitted.

63. See Chs. XII and XIII of Pt. II.

64. The remainder of this paragraph as well as the following paragraphs are omitted, since they deal, without being especially revealing, with some considerations of different audiences.

church, or vice versa. In this case experience is the incomparable teacher of invention.

71. The locus adjunctorum is used in music chiefly in the representation of certain persons (in oratorios, operas, and cantatas). It is used to depict three things: gifts of the soul, gifts of the body, and gifts of fortune. *

72. If anyone believes that these things cannot be represented in music, let him be assured and convinced that he is mistaken. The famous Joh. Jac. Froberger, organist at the court of the Emperor Ferdinand III, knew how to represent entire stories, including portraits of the persons present and participating, complete with the characteristics of their temperaments. I am in possession of an allemande and its associated pieces [Zubehör, i.e. a suite][65], in which the dangerous crossing of the Rhine by the count of Thurn is made clear to eye and ear by twenty-six descending note-figures.[66] Froberger had been present during the adventure.[67]

76. With strong imagination such inventions may be derived from the above source. One might, for example, imagine that some adorned person walks about saying, "It is I who teach justice"; or, "I tread the winepress alone."[68] Supposing I wished to set the following words meant for Pilate in a Passion:

> Trees whose branches reach too
> high into the air,
> will soon be cut down.

Finding that I could think of nothing suitable because there is no particular affect apparent in these words, I should turn my thoughts to the fortunes of Pilate. I should consider that he was a great statesman and governor and that this must lead to some pride and lust for power. Thus I should gain the opportunity for expressing the emotion of lust for power and majesty. Of course, the "reaching up" of the branches might also give some people an idea; however, inner feelings are always nobler than outward literal images.

77. The following locus circumstantiorum is of the same species as the preceding one, but with this difference: the concern here is with circumstances of time, place, past, present, future, and other such things. To discuss all this at length here would require a separate book. In view of the fact that the third part [of this book] could not be written

---

* Adjuncta animi, corporis, et fortunae.

65. This work appears to be lost.

66. "Descending note-figures" for Noten-Fälle is as close a translation as possible.

67. Since the works referred to in the two omitted paragraphs are all lost, the translator decided to save the space devoted to discussing these examples.

68. The "adorned person" who "teaches justice" and "treads the winepress alone" refers to Isaiah, 63:1.

without many examples, such a discussion would carry us too far.

78. Heinichen's attention to the theory of invention seems to be directed only to this locus circumstantiorum, since he discusses only antecedentia, concomitantia, and consequentia.[69] These, after all, represent only one part of one locus out of fifteen.

79. Next we have locus comparationis or comparison. Here similar things are juxtaposed with dissimilar ones, small and large, or vice versa. Into this category belongs the prose and poetry in which, for the sake of allegory, persons are used to represent, for example, day and night or other things; persons who can speak and sing. "One day tells the next," etc.

80. Locus oppositorum, contrast, should not be underestimated either. It is not only generally useful in music but gives rise to a variety of means by which to let one's inventiveness shine. We need mention only the various meters, motions running counter to each other, high and low pitches, fast and slow tempi, to show almost infinite possibilities of invention arising from this device. It does not matter whether or not these are occasioned by a text.

81. Locus exemplorum is presumably to be interpreted as imitation of other composers. One must, however, choose only the best examples and change them so that they will not just be copied or stolen. When all has been said, it must be admitted that this source is used most frequently. As long as it is done modestly, it need not be condemned. Borrowing is permissible; the loan, however, must be returned with interest; i.e. one must work out and dispose the borrowed material in such ways that it will gain a better and more beautiful appearance than it had in the composition from which it came.

82. Those who have such wealth that they do not need to borrow ought to be generous. I believe, however, that such persons are rare. Even the greatest capitalists will borrow money when it is convenient or advantageous.

83. The last source, locus testimoniorum, consists of the use of melodies composed by someone else and known to nearly everyone. The church-hymns, for example, are quoted in such ways that they become testimonials to or endorsements of the material which calls for their use. They serve as citatum or allegatum and often have a very fine effect. We may consider this good invention, since such music is

69. Heinichen (Generalbass i.d. Comp., p. 30) establishes the above three terms as the main sources of invention. He says that if a composer is confronted by a "dry text" (c.f. footnote 8), out of which he cannot draw any good ideas and which is not suited to "stimulate the natural imagination," he must look at the preceding text and try to get an idea there. If the aria, however, is at the beginning of a cantata, opera, etc., he should look at the text that is to follow. Concomitantia textus refers to the circumstances under which the aria is to be sung, i.e. the action may express an affect not mentioned in the text.

often exactly what is called for and is many times diligently and thoughtfully worked out.

84. This then, in brief, is an attempt to take the loci topici of rhetoric and apply them to musical composition, where they can be uncommonly useful.

85. There is, however, one kind of invention which is called abrupt, unexpected, and extraordinarily inspired [eingegeben] (inventio ex abrupto, inopinato, quasi ex enthusiasmo musico). This is helpful in the following cases:

1) When one has just studied the work of an excellent composer, especially if he has treated the same subject as ours.

2) When one feels a passion and, as it were, becomes steeped in it, as if one were indeed devout, in love, angry, contemptuous, sad, joyous, etc. This certainly is the surest path to quite unexpected inventions.

3) If one can use different inventions in one single melody, changing them instantly and unexpectedly and thus surprise the listeners. One must, however, make certain not to disturb the overall unity or purpose [of the composition].

Example of mockery unexpectedly turning to joy:

Adagio
Wol dem Volk, dem es al - so ge - het;
Allegro
a - ber wol dem Volk, des der Herr ein Gott ist!
Adagio
Wol dem Volk, dem es al - so ge - het;
Allegro
a - ber wol dem Volk, wol dem etc.

70. "Happy the people who fare thus, but happy [happier] the people whose Lord is one God." The above distribution of the syllables

Several different [alternating] inventions

(This translation will be
completed in the next issue.)

---

is to some extent conjecture. As so frequently Mattheson, or his printer, was careless in fitting the words to the text.

THEORY FORUM

RE: CONTEMPORARY TONE-STRUCTURES

By Howard Boatwright

In the Theory Forum of the November 1957 issue of the Journal of Music Theory, Mr. Allen Forte comments at some length upon my review of his Contemporary Tone-Structures, which appeared in the March 1957 issue. This makes it necessary for me to respond likewise at some length, although I do not do so with the intention of rewriting or modifying in any way what Mr. Forte describes as a fervently negative, even angry, review.

I do not recall having been angry at any time in writing the review of Contemporary Tone-Structures, but it is very clear from Mr. Forte's commentary that he is an irate author. He makes countercharges, offers challenges, and raises difficult questions in such quantities that a full issue of the Journal could be consumed in answering him. I shall do the best I can to reply within the space now available.

Mr. Forte rather sarcastically thanks me at the end of his commentary for having given his book a proportionately long review. He says he can understand a lengthy review of a bad book but not of a dull one, and that my generosity confounds him if the book is really as dull as I seem to indicate. I can come to an understanding with Mr. Forte on this point quickly, if not on others. The review of Contemporary Tone-Structures is long because of my interest in the subject with which it deals, not because of any particular quality of the book itself. The same is true of this response to his commentary.

Mr. Forte correctly states several points on which we are quite at odds. The first of these points (not taking them in the order in which they are presented, but in the order of importance) concerns the proper field of the music theorist. Forte says, "Composed music is his [the music theorist's] special field, not the physics of sound." Verbal communication between us seems to have been faulty at this point, but the fault was not mine. I did not make the statement in my review, as Forte suggests by this remark, that the music theorist's special field is the physics of music. What I said was that the theorist should deal first of all with what nature presents to him, which carries no implication that these matters entirely constitute his special field. The physics of sound (as Mr. Forte himself knows, judging from certain statements in his commentary) is only one of the subjects other than composed music which may be helpful to the music theorist.

While I attempted only to define the starting point for the music theorist, Mr. Forte says with great positiveness that composed music is the special field. With that statement, of course, he excludes some manifestly important contemporary theorists, and countless others back to antiquity who have dealt with the basic problems of tonal ma-

terial — what are the tones? what are their proper intonations? how can they be organized? Mr. Forte's definition, however, handily includes all that group of theorists whose main activity is to examine composed music and to describe its motions, but not to attempt to seek (beyond purely stylistic bounds) the reasons for these motions.

Mr. Forte also correctly concludes from my review that I feel that "if functions are to be described they must be related to a general theory and not merely to the structural basis of the particular composition under consideration." As a penalty for having pointed out that his book suffers from the lack of such a theory, he then challenges me to reveal one myself! Rather a lot to expect of a reviewer!

Even though Mr. Forte has no general theory with which to support his analyses, his book would be more convincing if he clearly defined the terms he uses. For example, in the sentence quoted above he uses the word "functions." Here, and in Contemporary Tone-Structures, he uses this word with no clarifying additions. One cannot tell in a given discussion whether he means the functions of the tones in relation to a tonal center (he could have called these "tonal functions"), or the functions of melodic or rhythmic units in the temporal structure (perhaps, "formal functions"), or some combination of these functions.

Mr. Forte uses the term "structural basis" in the sentence quoted above. Does he mean by this the tonal material itself (the pitches and their combinations in intervals and larger units), does he mean the technique of construction used by the composer (canon, serial technique, etc.), or does he refer to a stylistic feature such as a system of harmonic progression?

Another important term used by Mr. Forte without a precise explanation of its application to the musical texture is "embellishment." This is a serious defect in a system of analysis which relies extensively on reduction. It results, of course, from the lack of a theory of chord structure relating to compositions such as Mr. Forte attempts to analyze. How is one to know what is "essential" and what is "non-essential" if one cannot tell what the chords are? If one goes through Mr. Forte's analyses, music and text in hand, one finds numerous cases in which the tones omitted in a given stage of reduction seem more essential than those retained — i.e. they seem so if one has his own idea of essential chord structure in mind. And what else can one have, since the author does not supply one? It is not even possible to follow these analyses on a harmonic basis with which one disagrees, because such a basis is simply not given.

If Mr. Forte believes that composed music is the theorist's special field, it is surprising that he includes at all in his book a chapter called "Fundamental Considerations" (Chapter 2). In this chapter he speaks of those matters that, in line with the view I have expressed, a theorist ought to begin with. Of particular concern to me was the section called "The Postulational Basis of Traditional Music," for it is in this section that he attacks not merely some traditional concepts, but the whole line of music theory which they represent. It is in this sec-

tion, too, that he first expounds his idea that a postulational basis is as readily acceptable as a natural basis in the explanation of musical phenomena.

It was in connection with Chapter 2 (in fact, with the above-mentioned section, occupying only about a page in the book) that I made what was the most serious, and perhaps offensive, charge against Mr. Forte. I suggested that this chapter on "fundamental considerations" shows such a lack of solid theoretical background that Mr. Forte would not be able, if this were his intention, to come to grips with the basic questions involved in the construction of a general theory.

A good part of Mr. Forte's commentary is devoted to the "assertions" by which I tried to substantiate this charge. Mr. Forte only adds substantiation by some of his statements in the commentary. For example, he says that I fail to realize that "the overtone series is itself a construct which may one day be replaced by a different construct." It is not I but Mr. Forte who is with Alice in Wonderland if an acoustical fact (it is not a "construct") like the formation of nodes on a vibrating string may suddenly, "one day," undergo complete change.

Mr. Forte goes a little wild in bringing up controversial issues in his commentary. He dangles before me a number of old problems, such as the derivation of the minor triad from the overtone series. Rather than nibble on these not too tempting items, which are not mentioned at all in the book itself, I would prefer to use the space at my disposal here to go over once again, more thoroughly, the section of Mr. Forte's book of which I was originally so critical. In so doing, I will be able to answer a number of the questions posed in the commentary. If the ensuing discussion of elementary acoustical facts is tedious to the reader, he may blame Mr. Forte, not me, for belaboring the obvious in an effort to simulate controversy.

In the section of Chapter 2 to which I referred earlier we encounter the statement that "the overtone series as a natural basis for this relationship [the dominant function] is open to question on at least three points." I should like to quote these three points directly here, and discuss each of them.

1. The pure overtone series as it exists in nature is unknown to modern ears. Fine adjustments have been made to conform to equal temperament. Footnote: For a detailed explanation of these adjustments, see Paul Hindemith's The Craft of Musical Composition (New York, Associated Music Publishers, 1941), pp. 14-52.

As to the first sentence in this statement, the pure overtones are surely not less well known to modern ears than to the ears of the past. As far as keyboard instruments are concerned, their tunings never managed to include (even before equal temperament came into general use) more than a certain number of naturally tuned intervals. The sources for the overtone series as it exists in nature remain the same

as in the past — the natural notes of brass instruments, and the harmonics playable on strings. Then, too, overtones are heard (although we cannot perceive them separately from the fundamental) as components of the tones of most musical instruments, quite as much nowadays as in the past. Mr. Forte can have visible evidence of the presence of overtones in the sounds of various instruments if he will look at the illustrations in various books of D. C. Miller, or at the reproductions of his phonodeik recordings of sounds in many other books on the physics of music. The presence or absence of some partials in various tones, moreover, does not weaken the case for the influence of this natural grouping of pitches upon our musical thinking. If we hear a tone produced under special conditions with no overtones at all, it will not sound like a perfectly normal tone, but our ears, as vibrating instruments themselves, will add overtones. Aural harmonics are a demonstrable phenomenon, as Mr. Forte can determine by consulting any general book on musical acoustics.

Mr. Forte, in his commentary, seems to believe that there is no way of proving the influence of the overtone series upon our thinking, since our contact with it (as a manifestation of tone quality) is not entirely conscious. That this arrangement of pitches comes to our sense organ, the ear, is provable. Is it not true that anything we perceive, even in sleep, makes its impression upon our minds?

The second sentence in this statement says that fine adjustments have been made to conform to equal temperament. Adjustments on what? On the modern ear? On the proportions of the overtones which sound from strings or pipes? On tuned keyboard instruments? One cannot tell exactly what is meant by this sentence. As though to compensate for the inadequacy of this statement, the reader is referred to certain pages of the Craft. This reference is completely inexplicable here, as these pages contain a colorful description of the overtone series followed by a method of deriving not only the fifth step (the dominant) from the series, but all the other tones of the chromatic scale which later form Hindemith's Series 1., giving the tones in order of functional strength (tonal functions) from the dominant to the most distant degrees. As for Hindemith's discussion of the adjustments made to conform to equal temperament, I quote one representative sentence (p. 28): "Fortunately, however, the instruments and voices which can produce pure intervals are in a majority over the keyboard instruments, and we need hardly assume that musical sensitivity will ever sink so low as to allow keyboard instruments undisputed mastery." How does this statement support Mr. Forte's contention? The section on pages 44-45, which discusses the shifting of the comma by performers who do not deal with fixed pitches, does mention "adjustments," but they are of a kind far removed from those accomplished by equal temperament. I can only conclude from this totally misleading page reference that the Craft is no part of Mr. Forte's absorbed theoretical background. It certainly should not have been cited here, as all its arguments tend to disprove, not prove, the statements it was intended to support.

2. The overtone series has to be carefully "picked out" on an open pipe, or carefully selected on an open string

by dividing the string symmetrically. It would be just as "natural" and certainly as logical to over-blow the pipe, or to divide the string asymmetrically. This is, in fact, what occurs in the music of many other cultures, e.g., in Japanese music.

In this statement I am not sure what Mr. Forte means by "dividing" a string. Could he possibly mean measuring string lengths as for a monochord, and playing them by stopping the string? Or does he really mean "picking out" harmonics by touching the string lightly at the various nodal points? If the string is to be stopped, any measurement, symmetrical or otherwise, can be realized. But if harmonics are to be played, one can only produce those which result from the way the string divides itself at the nodal points. These divisions are symmetrical, if the string is of consistent construction throughout its length. Mr. Forte should try for himself to get any sort of tone from a violin string by touching it lightly at some point other than the location of one of the simpler nodal divisions — at some "asymmetrical" point. He will find out then, at first hand, whether or not it would be "just as natural to divide the string asymmetrically."

If a pipe is overblown, the pitch will rise a little at first, and then it may jump either to the octave above, or to the twelfth above, according to whether it is an open or closed pipe. These tones, again, are "natural." I fail to see how Mr. Forte gains anything for his argument from these statements about overblowing pipes. On the contrary, the results of overblowing a closed cylindrical pipe (of which the clarinet is a practical example) demonstrate the ready availability of the second overtone, indicating that if we are influenced at all by the overtone series and the interval relationships contained in it, we would be more impressed by the relationship of this overtone to the fundamental than by that of others, which are not so easily available.

Having heard Madame Harich-Schneider lecture on Japanese music (with recordings) just a short time before I reviewed Mr. Forte's book, I discussed his remarks in this section about Japanese music as though he were referring to expressive distortions of intonation. Looking at his remarks a year later, I have no idea what he means, and I have the impression that this reference to the music of other cultures proves absolutely nothing here without some supporting evidence.

3. The lower overtones are generally assumed to be purer or more fundamental. If this is so, then why is the second rather than the first overtone chosen as the second component in the dominant-tonic relationship? Involved here is the assumption of octave equivalence, or tonal identity, which will be discussed in a subsequent section.

Mr. Forte has a little verbal difficulty here, as what he must mean is that the intervals found among the lower overtones (not the individual overtones) are purer than those found higher in the series. He says here that this fact is "generally assumed." But in his commentary

he challenges me to prove that it is true, as though the idea were an invention of mine.

Chapter X of Helmholtz's On the Sensations of Tone will supply Mr. Forte with some ideas as to why one interval is "purer" than another. But without going even so far as to consider beats between the higher overtones as a factor in determining the relative consonance and dissonance of intervals, Mr. Forte can observe for himself some reasons for the differences between them. If he will write out an overtone series through several octaves above a C, another one above a G, and still another above an E, he can see at least part of the basis for our feeling that even the simpler intervals are quite different in effect. If he compares these series of overtones, he will see that the ones above C and G coincide very often at the unison, and those of C and E do so much less often. According to the resonance theory of hearing, there will be a difference, physiologically (which saves us the ambiguities of an entirely psychological explanation), between the fifth and the major third. The former will agitate fewer pitch-sensitive points in the Cortian organ along the basilar membrane than the latter. If, then, we try to use words to explain the sensations we receive from the various intervals, we are inclined to use terms relating to more easily observed senses. In relation to the tactile sense, we may say "smooth" for the sounds giving little stimulation, and "less smooth," or "rough" for the sounds giving a higher degree of stimulation. The common use of the term "pure" for the intervals with simple vibration ratios may come about in this same way, possibly by visual imagery — pure water, for example.

Difference tones offer still another support to the theory that intervals found low in the overtone series, and with simple ratios, are "purer" than those found higher in the series. The lower the interval is, the less it is "clouded" by the grumblings of these extra frequencies produced by the non-linear vibration of the ear. The lower intervals, 2:3 and 3:4 are not disturbed by any difference-tone which is not merely an octave duplication of one of the tones in the interval. With the interval 5:6, the difference tone of the first order is a frequency not in such a relationship to the real tones. By comparison with 5:6 or other intervals still higher in the series, the interval 2:3 will sound "transparent," "clear," "pure," or any other adjectives one can think of to express this unmistakable aural sensation.

Mr. Forte says in his commentary that I seem to evaluate relationships between the intervals on the basis not only of "purity" but of "similarity." This statement is not correct, as all I said in my review was that the tones of an octave are similar. I hope Mr. Forte will be willing to let me abandon that statement without proof.

I refer the interested reader to my review for a consideration of Mr. Forte's question as to why the second rather than the first overtone is chosen as the second component in the tonic-dominant relationship.

I hope that the above discussion will have answered some of the

questions Mr. Forte raises in his commentary. It is plainly beyond the responsibility of a reviewer to have to supply an author with information he should have had before treating a given subject. But if, in response to a review, the author asks questions (instead of offering better answers), the reviewer must try to provide these answers, thereby extending the original criticism still further. And so it can go on, ad infinitum.

If it can be said that Mr. Forte's statements against the traditional explanation of the dominant function do not stand up, then one is justified in not wishing to abandon this theory, and even less so the whole line of investigation which it represents. If Mr. Forte cannot disprove this simple theory, could he, then, disprove Hindemith's theory that all the chromatic tones have a definable relationship to a single tonic, and that these tones can be derived in their just intonations from a single generating overtone series? Or could he cope with Joseph Yasser's derivation of the basic hexad and just intonations of a hypothetical chromatic system from the overtone series?

Perhaps Mr. Forte himself did not think through to the realization that his apparently innocent assumption of a postulational basis is not only completely contradictory to the work of such theorists as Hindemith and Yasser, but to one of the most convincing theories as to the very origins of Western polyphony. As we all know, the earliest polyphonic style was based mainly on perfect consonances. This style was succeeded by one using thirds and sixths as the principle harmonic units. What reason would Mr. Forte offer for this particular sequence in the utilization of the many available intervals? Would he be willing to say that the sequence might as well have been polyphony using minor seconds at first, proceding to a polyphony using fourths and fifths? Why not, if the choice of these sounds to the earliest composers was as free as the choice of a postulate to a mathematician? Mr. Forte points out that "postulates, premises, hypotheses, etc., — in short, assumptive bases of all kinds — are quite respectable in other fields. I, for one, do not believe that the evolution of music has proceded that way, that it really shows such a tendency at present, or that it will in the future.

I have begun by trying to clarify my principal criticisms of Mr. Forte's own ideas. Mr. Forte, in his commentary, spends most of his space on a defense of Schenker, not himself. As for that part of his commentary, I have little to say, as this was a smaller issue blown up to larger proportions by Mr. Forte in an obvious effort to divert attention from other matters discussed in the review.

Even in this effort, Mr. Forte is inconsistent, as he first denies that Schenker's methods were as important to his book as I implied, and then he spends pages defending Schenker as though his ideas were exactly as crucial to his work as I had suggested.

Mr. Forte says that I claim to "venture a few words," and then deliver a highly specific critique, which appears directed at Der Freie Satz.

First of all, 46 lines at the very end (a coda, so to speak) of a review totalling 262 lines is only a few words. Secondly, it is entirely Mr. Forte's own idea that I deal with Schenker's theories in the larger sense in these few lines. I did not discuss anything more than the sort of analytical reduction at hand in Mr. Forte's book.

In discussing the relation of this type of reduction to a music for which no general theory is as yet available, I called it "premature," a statement on which Mr. Forte dwells. He cites the earlier publication of the Katz and Salzer books as evidence that this statement of mine is "quite ridiculous." Without wishing to start a controversy with these authors, too, I submit that their earlier arrival on the scene is not necessarily proof that Forte's arrival is not also early.

What I meant by my statement (and there are evidences in Mr. Forte's commentary that he understands this perfectly well) was simply that no application of these methods of reduction could function for us as for Schenker until the development of a general theory. Mr. Keller's review seems to touch on this point. He says that Schenker would turn over in his grave in view of Forte's adaptation of the concepts of foreground, middleground and background for the purpose of analyzing works which he would not have considered music at all.

Why would Schenker not have considered these pieces to be music at all? I suggest that it was because he had no clear overall theory to account for these works as he had for the music with which he concerned himself. And if he is turning in his grave, I do not believe, with Mr. Forte, that he is jealousy-propelled.

* * * * * * * * * *

RE: BEETHOVEN'S USE OF INTERMEDIATE KEYS

By Willard Warch

It is generally recognized that modulation is bound up with form. In fact, in the binary suite form of the Baroque and in monothematic pieces of music the modulations are the essential ingredient of the form. Even in the standard "text-book" examples of sonata-allegro, the presentation of the themes in two keys is the necessary formal element, not the number or type of themes.

Since the modulations accompanying the transition from the first to the second group of themes are an essential part of sonata-allegro form, it would seem likely that some composers might have given them special attention and perhaps special treatment. Investigating this possibility, the writer has examined the transition from first to second theme, or group of themes, in the movements of Beethoven in sonata-allegro form.

It is apparent that Beethoven very often did indeed give the modulations at this point in the form a special treatment. Beethoven elaborated and emphasized them by passing through one or more intermedi-

ate keys on his way from the key of the first group to that of the second. This process can be seen at its simplest in the fourth movement of the String Quartet Opus 59, No. 1, the transition being from a first group in F major to second group in C major. The intermediate key (A minor) consists merely of the repetition of an A-minor triad preceded by its dominant. This is but a slight expansion of the pivot-chord modulation F-major III equals C-major VI and might be termed a "pivot-key" or "common-key" modulation. At the other pole of complexity is the transition of the finale of the String Quartet Opus 18, No. 1, which, after the first 26 measures in F major, spends 23 measures "tonicizing" D minor, A minor, D major, and G major on its way to C major, the key of the second group. Finally, for a more nearly typical example of Beethoven's practice, the writer has chosen the transition in the first movement of the Piano Sonata Opus 10, No. 1. This bridge passage (measures 32-55) takes us from the tonic key of C minor to E-flat major by way of A-flat major, F minor, and D-flat major. A four measure phrase in A-flat major is repeated sequentially in F minor and then in D-flat major with a four measure extension moving to E-flat major.

Approximately two out of every three movements written by Beethoven in sonata-allegro form use the intermediate-key principle in the straightforward order of tonic key, intermediate key(s), key of the second group. A few others have second groups which begin in an intermediate key. Others employ change of mode within the second group (e.g. Opus 2, No. 3, 1st movement, C-major tonic; second group begins in G minor and changes mode to G major). Yet other movements, after establishing the second-group key early in the transition, proceed to tonicize other keys during the course of the transition. Altogether, more than four out of every five of Beethoven's movements in sonata-allegro form employ the intermediate-key principle in some form. As for the others: three are very early works, eleven are short concise movements (e.g. Opus 109, first movement), twelve are for orchestra and two others (the first movements of the Horn and Piano Sonata and the Septet), like the orchestra pieces, include instruments which in Beethoven's day were so limited that his choice of keys and tones was affected by this factor.

Even if there remain a few "exceptions that prove the rule" it seems amply evident that Beethoven's normal procedure is to make the modulation from first to second group in sonata-allegro an extended process involving the use of intermediate keys or tonicizations.

As might be expected, Beethoven also uses intermediate-key modulations in movements cast in other forms. Examples can be found in the transitions of his fully developed rondos, the finales of his sets of variations, in fact, anywhere that there are main joints or seams in a form and the music has the dimensions and complexity to make the process appropriate.

Speculation as to why Beethoven used this intermediate-key procedure leads one to the conclusion that, in the first place, intermediate keys serve to make the final goal of the passage feel like a real tonic. As R.O. Morris puts it, they "obliterate the sense of the tonic and pre-

pare the way for the new key."[1] Secondly, within the recapitulation, a modulatory transition, even though it leads from tonic back to tonic, will set off, and thus make clear, the entrance of the second group.

Finally, why was Beethoven's practice not more widely imitated by the many later composers who so greatly revered him? Perhaps the increased use of altered chords and tonicizations within a theme largely destroyed the need for tonal variety that these intermediate keys added to music consisting more generally of diatonic chords. Or it may be that though they revered him, later composers simply did not observe his methods closely enough to be able to incorporate them successfully into their own compositions.

* * * * * * * * * * *

RE: CHROMATIC MEDIANTS — A FACET OF MUSICAL ROMANTICISM

By Hans Tischler

No American textbook of harmony records the technique with which this commentary is concerned. This is all the more strange because it is treated in European texts. An explanation of the technique seems therefore appropriate. Before explaining it, it may be well to discuss the frame of reference within which it occurs and the place which it occupies therein.

One, if not the most important, technical ingredient of musical Romanticism is chromatic harmony. Melodic chromaticism, while often present, is not equally characteristic since it may be found in most music since the early Baroque. On the other hand, the use of two successive chords which belong to two different keys and therefore contain tones represented by the same note symbols but with different accidentals, that is, chromatic harmony, occurs only sporadically in the Baroque, hardly in the Rococo, but everywhere in romantic music.

There are four basic techniques that produce chromatic harmony. The first may be called "modal mixtures" and consists in replacing any harmony of a key by a harmony on the same degree of another mode based on the same tonic. Thus in a normal I-ii-V-I cadence in C major the D-minor triad may be replaced by a diminished triad on D derived from C minor, by a D-major triad derived from C Lydian, or by a D-flat-major triad derived from C Phrygian. This is the simplest of the four techniques; it was used throughout the seventeenth and eighteenth centuries.

The second technique is that of "secondary dominants (and subdominants)," a process which is taught in American textbooks by Walter Piston and by Roger Sessions under the title "tonicization." It consists in temporarily using any harmony of a key, other than the tonic, as a

1. R.O. Morris, The Structure of Music, (London: Oxford University Press, 1935), p. 38.

tonic in its own right by introducing or surrounding it with its own dominants. Thus in the above cadence in C major, I-ii-V-I, the D-minor triad can be tonicized by the G-minor and A-major chords. This technique, which is characteristic of Chopin, Wagner, and their successors, was used extensively before the nineteenth century by only one master: J. S. Bach.

A third technique may be called "chromaticism due to melodic tension." It employs chromatic passing tones, appoggiaturas, and other non-harmonic tones for the construction of chords. For example, in the above cadence in C major, I-ii-V-I, the bass line may be changed to read C-C#-D-F-F#-G-C, and any well-sounding chord can then be built on C-sharp and F-sharp, such as half-diminished $\frac{4}{3}$ chords reading D^b-F-G-B^b and G^b-B^b-C-E^b. Often two simultaneous chromatic lines are united by just filling in between or around them with some well-sounding, though tonally unaccountable, chords. Thus, whereas the first two techniques, those of modal mixtures and secondary dominants, expand but do not forsake tonality, this technique often leads to non-tonal passages.

The fourth basic technique of chromatic harmony, that of "chromatic mediants," goes even further in abandoning tonality. It exploits the various possible progressions from any major or minor triad (or such a triad plus a seventh or ninth) to any other such chord whose root is a major or minor third away. Take, for example, a C-major triad. There are eight triads that stand in a mediantal relationship to it, namely E-major, E-minor, E^b-major, E^b-minor, A-major, A-minor, A^b-major, and A^b-minor. Of these eight triads two, E-minor and A-minor, are diatonic mediants, that is, belong to the key of C major; two other triads, E-major and A-major, include one chromaticism with respect to C major, G# and C# respectively; two further triads, E^b major and A^b-major, produce two chromaticisms each, E^b, B^b and A^b, E^b respectively; the last two triads, E^b-minor and A^b-minor, clash in all three tones. Every major triad may thus be said to possess two diatonic mediants as well as two chromatic mediants each of the first, second, and third degree. And this statement is equally true with respect to any minor triad.

Chromatic mediants are not necessarily non-tonal. Modal mixture may well produce them. In C major, for instance, the tonic triad and the minor-derived submediant, i.e. the A^b chord, are so related. On the other hand, many chromatic mediants leave tonality behind and exist merely because of the colorful clash of chords which already attracted Gesualdo and Giovanni Gabrieli.

It would seem to be worth determining whether this technique, which, with the exception of a short period around 1600, is characteristic only of romantic music, is related in any way with the progress of Romanticism. The best method to do this would be to choose at random a group of similar works by masters from each generation of Romanticism for scrutiny. However, unless a great number of works are chosen, the choice cannot be really random but must be made from representative works by masters representing Romanticism in har-

monic procedure. It is hoped that the works mentioned below meet the necessary requirements for our search.

Secondly, it is necessary to classify the various uses of the technique. One such classification has already been discussed, namely the various degrees of chromatic relationship between mediants. According to a second classification chromatic mediants may be employed for contrasting large sections of works, such as movements; for contrasting phrases, periods, or themes; or for contrasting two successive chords. But only the last two of these uses are significant for our project.

The analysis proceeds statistically. For each work the number and kinds of chromatic mediants and the number of measures are given. Statistical analysis of a style is always a hazardous enterprise, to be sure; whereas, in our case, the occurrence of one chromatic mediant in a stressed position may be more important than five fleeting, hardly noticeable chromatic mediants elsewhere, our statistics will have to include them without regard to relative stress. Nevertheless such inequalities tend to cancel each other in large samples. In the following analyses the figures can be taken in fact at their face value.

The works analyzed are the first movements of the Piano Sonatas Op. 31, No. 2 in D minor of 1802 by Beethoven, Op. 42 in A minor of 1825 by Schubert, Op. 35 in $B^{\flat}$ minor of 1839 by Chopin, and the Violin Sonata in A major of 1886 by Franck, as well as the second movement of the Fourth Sonata of 1903 by Scriabine.

In the Beethoven movement there occur within 228 measures exactly four chromatic mediants in successive chords, two of the first degree and two of the second; in addition the development section of this movement in D minor is in F# minor, and this key is subsequently brought back once more.

The Schubert movement is the longest of the five here considered, 311 measures. In it not only triads are contrasted as chromatic mediants; over half of the chords used in this way are V_7 chords and one even a V_9 chord. There are ten such passages in this piece; a further passage presents a succession of three chromatic mediants. Nine of these mediants are of the first degree and four of the second. Moreover, twice, sections of the development stand in relationships of chromatic mediants, one of the first degree and one of the second.

In the 241 measures of the Chopin movement there occur no fewer than seventeen chromatic mediants in immediate chordal successions involving over twice as many V_7 chords as triads. Ten of these are of the first degree and seven of the second.

The shortest of the five pieces is Franck's; but in its 117 measures we find as many successive chromatic mediants as in Chopin's work which is more than twice as long. Of the seventeen such passages only one is of the first degree; fifteen, of the second; and one, of the third.

The last work on our list, Scriabine's, exhibits in 166 measures no less than thirty chromatic mediantal progressions involving almost the same number of triads, V_7 chords and V_9 chords. Of these progressions twelve are of the first degree; three, of the second; and fifteen, of the third.

The evidence given by these five movements is quite clear. Wherever harmonic procedures play a major part in romantic music the technique of chromatic mediants plays a significant role. With the progress of Romanticism the use of this technique increased and at the same time the more distant relationships within this technique became increasingly favored. On the other hand — and this is not clearly shown by the examples here adduced but is nevertheless true — contrasting of sections of movements by means of chromatic mediants decreases. Among our five selections only the earliest ones, those by Beethoven and Schubert, used this device. It seems that the more complex the internal harmonic texture of phrases became the less did composers wish to complicate the external harmonic relationships from phrase to phrase.

In closing it may be added that a similar analysis with respect to modal mixtures, secondary dominants, and tension-created chromaticisms would produce very similar results.

* * * * * * * * * * *

RE: UNITY IN MUSIC

By William H. Reynolds

An unfortunate tendency in teaching courses in harmony (and even in more purely analytical studies) is that of confining analysis to a mere harmonic dissection of a given piece of music. The value of that kind of study is limited at the most to practice in the recognition of chords and chord progressions as they appear in scores representing different styles or textures and different media.

Such routine harmonic analysis can never be much else than dull; and, once a student has gained facility in handling harmonic materials, it is well-nigh meaningless. A more mature approach, and one which embodies considerably more interest for students, is the kind of analysis which attempts to determine the means of organization by which a given musical composition is unified in an overall sense and at various levels. This kind of unity involves consideration of harmonic relationships, to be sure, but together with other unified elements such as melodic line, rhythmic balance, and structural and formal details.

It is obvious that the beginning student in harmony will scarcely be able to produce analyses of complex works which will be in any sense profoundly perceptive. It is important, however, that he be made aware from the very outset of his musical studies that one aspect of music cannot stand in a compartment by itself and render meaning while effecting little or no interaction with other structural elements of the

form. The real acquaintance with and understanding of a composer's style and particular genius can never come from a one-sided investigation of his work; rather one becomes acquainted with a composer or with a given composition by considering the means by which various musical elements react with one another, producing unities which may be in the large or in the small, in the tangible or relatively intangible, but unities which are a part of the physical appearance and personality of a musical work.

Even at the beginning level of musical study a student ought to be expected to begin as soon as possible to point out the relation of harmonic details as a structural reinforcement of form. Further, the student ought to be expected to perceive the linear destination of the melodic material of a composition and to observe what relation exists between the melodic material and the harmonic material, including such details as the treatment of areas of melodic climax. Especially important in a consideration of the melodic line and its relation to harmonic materials should be the reduction of the melodic line to its structural, unembellished form with attention given to the manner in which the harmony provides reinforcement for this skeletal line. Illustrations of this will be discussed later.[2]

Beyond this it is desirable to stimulate an awareness in the student's mind of some of the many less obvious means by which compositions may be given unity. As a student's musical intuition and perception grows, he should develop an increasing awareness of such techniques.

Each musical composition of the common-practice style will involve the utilization of primarily similar musical details. The varying means and proportions of these musical details will determine in large measure the uniqueness of a given work. The following comments are offered only as suggestions which could be applied to individual attempts at an over-all musical evaluation through analysis on the one hand, through the reverse process of musical synthesis on the other.

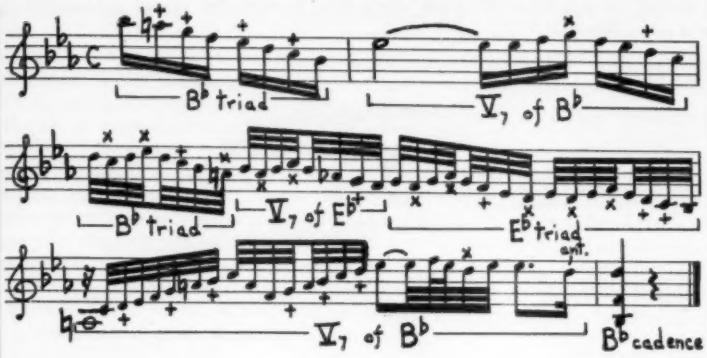
A given melody should reveal certain implications. A composition is not well unified if the harmonic implications of its melody are left unfulfilled. The means of implication include the following: emphasis on a single tone by its placement on an accented beat, by its obvious repetition, or by its placement as a goal of stepwise or chromatic linear movement; outlining a specific chord by leaps from strong to weak areas of a measure or from one unaccented part of a measure to another; outlining a chord by leaps which have been filled in with passing or other non-harmonic tones; emphasis on specific tones by placing them at turning points of the melodic line (Example 1).

A striking unity in melodic writing can be achieved by the exploitation of a specific interval to which the melody is limited through a considerable portion of its movement or which, although filled in by stepwise movement, is pointed up nonetheless by a turning of the line (Example 2).

2. See examples 3, 4 and 5.

Example 1.

Harmonic implications through emphasis on single tones.



Passing tones +
Auxiliary tones ×

J. S. Bach, Prelude VII, WTC I.

Example 2.

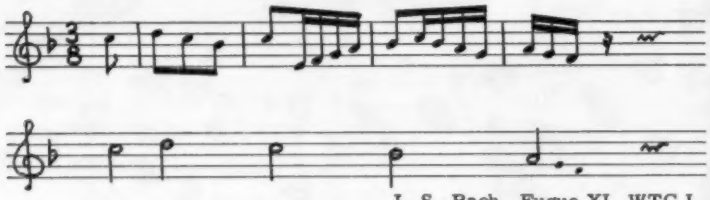
Melodic emphasis on the interval of the fourth by leap and by scale progression.

J. S. Bach, Prelude VII, WTC I.

All melody is susceptible to reduction to basic movement. This has to do with the concept of a foreground area in which the entire melody is involved from which it is possible to remove surface ornamentation and non-essential movement, reducing the melody to a more skeletal background in which the actual structural linear movement is laid bare (Example 3).

Example 3.

Melodic reduction to skeletal background.

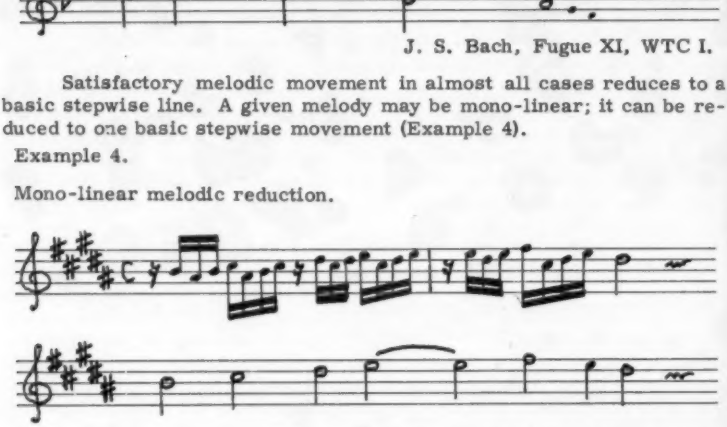


J. S. Bach, Fugue XI, WTC I.

Satisfactory melodic movement in almost all cases reduces to a basic stepwise line. A given melody may be mono-linear; it can be reduced to one basic stepwise movement (Example 4).

Example 4.

Mono-linear melodic reduction.



J. S. Bach, Prelude XXIII, WTC I.

Many melodies may be bi-linear or even poly-linear; a polyphonic movement is couched within the framework of a single melody (Example 5).

Example 5.

Bi-linear melodic reduction.

J. S. Bach, Fugue III, WTC I.

Returning to the foreground of melodic writing, it is true also that the consistent use of a particular kind of ornamentation within a piece will create unity. Similarly, one of the surest means of achieving unity is the use of imitation or canon; likewise, the use of melodic, harmonic, or rhythmic sequences is a very direct means of unity.

A very important role in the unification of a musical composition is played by the harmony and the harmonic texture. The employment of a relatively continuous balance between consonance and dissonance, related to what Sessions calls "dissonantal tension,"[3] must be accepted as a most important principle. There must be an avoidance of any harmonic material which sounds out of context. Context is, in this instance, the established norm of harmonic color for any given piece. Thus the harmonic context of a Chopin Prelude is quite different from that of a Bach Prelude. Obviously, if any deviation from the norm is to be involved within a single section or a short piece, it must be done subtly and skillfully or else the desired unity of the composition is not maintained. In short, the principle involved is simply that of avoiding any isolated instance of unique texture or sound.

Even among common, diatonic harmonies some are stronger and some are weaker. Likewise, the strength of a root position triad is considerably more apparent than any of its inversions. For proper unity it is logical for the structural areas of the melody to be given stronger harmonic support, perhaps by root position triads. The following Bach chorale would demonstrate this kind of unity (Example 6).

Example 6.

Reinforcement of melodic skeleton by root-position harmonic support.

3. R. Sessions, Harmonic Practice (1951), pp. 397-398.

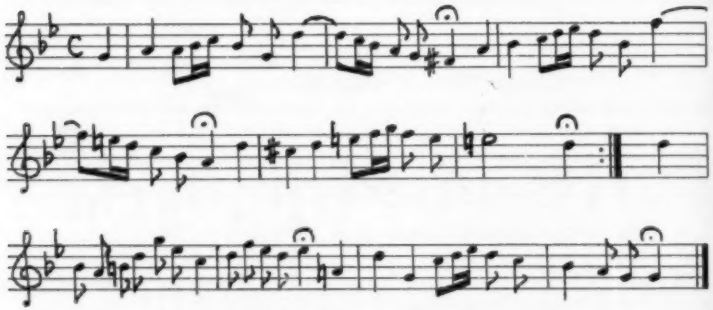
The pattern of harmonic change is usually a fairly regular one. One, two or more chord changes per measure generally occur with regularity, though any specific measure may easily differ from the norm.

The question of rhythm is an elusive one, one which deserves less definition in a study of harmony than in a more creative composition study. However, the same sort of principle as was discussed for harmonic texture applies here. Basic rhythmic movement, the sum of the rhythmic movements of each individual part, is an essential means of gaining unity in music. It is important to consider it in that light here.

Whatever the basic rhythmic movement of a piece of music, whether it be half-, quarter-, or eighth-notes, or something more complex, any abrupt or isolated deviation from the norm should be avoided. This has to do with unique rhythmic features such as syncopes, or sudden rapid figures, which differ appreciably from the established norm of rhythmic movement. When such unique movement occurs it is liable to sound out of place or isolated from the general context unless such unique movement is made to occur with sufficient frequency that it justifies its own existence as a unifying factor of elaboration (Example 7).

Example 7.

Melodic unification through sixteenth-note elaboration.



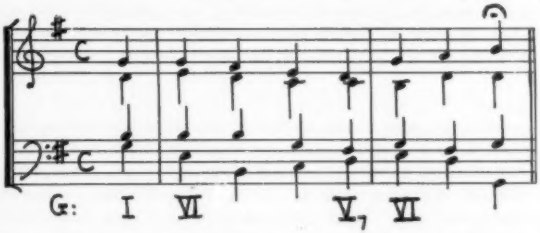
Of course, the meter of a composition sets up a recurrent pattern of successive accented and unaccented beats, representing the establishment of the strong and weak areas of the measure. In teaching harmony one seeks to establish the unity between meter and harmony that is desirable by causing strong harmonic progressions to be associated with the stronger portions of the measure, using whatever weak progressions one may wish to employ in connection with the weaker portions of the measure. The association of these elements can be most simply stated as follows: The first beat of any measure is the strongest part of any measure; to coincide with this metrical strength it is desirable to employ a strong progression across the bar line so that the strongest change of chord will be unified with the strongest area of the musical measure (Example 8).

Example 8.

Establishment of unity between meter and harmony.

Poor: Weak harmony across bar lines.

Good: Harmonic strength and metrical strength coordinated.



Finally, the various aspects of unity within melody, harmony, texture, rhythm and meter, as discussed above, must function in unity with the over-all structure or form of composition. Form is not to be considered the application of an external plan or building scheme but rather the logical outgrowth of the music itself. This is simply to say that the various elements of a composition must serve to reinforce the over-all form of the composition. A very important aspect of the reinforcement of form is the heirarchy of cadences[4] which, in a sense, punctuate the flow of the music.

The elements which constantly seek unification in a piece of music cannot be set down in any complete list, for each piece is a law unto itself. Each melody sets up its own particular implications which seek realization and exploitation (or unification), and so also does each harmonic context and each rhythmic context.

4. The lesser cadences associated with phrase endings and the stronger cadences associated with conclusions of musical sections with the final cadence the most important of all would seem to form a kind of heirarchy of cadences.

Besides making possible more meaningful musical analysis, the study of unifying factors should produce an awareness which will help the perceptive potential composer to approach at least a rudimentary grasp of implications present in his own creative work. It is true that the problems of unity are of such subtlety as to defy verbalization, and it is all too possible that they may never be completely understood. This seems all the more reason to introduce basic concepts which will bring about a consideration of this important subject at the earliest possible moment in the study of music theory.

* * * * * * * * * * *

RE: A GENERAL THEORY OF MUSIC

By Leigh Gerdine

Perhaps we are now far enough along to posit a "general" theory of music, a theory broad enough to fit into its statement such disparate styles as those of Machaut and Schönberg and to make of the prevailing harmonic idiom of the sixteenth century or the eighteenth century or any century a "special" case. Theorists and acousticians have returned again and again to the natural harmonic series to bulwark their hypotheses. Though the system of equal temperament has confused this issue somewhat, it is to the natural harmonic series that I would also appeal.

1) First, to make a general statement: the history of musical theory may be regarded as an exploration of harmonic possibilities of combinations of ever closer intervals occurring higher in the natural harmonic series. To the simple octave, in which men's and women's or men's and boys' voices must naturally have sung, have been progressively added the fifth and fourth, the major third and the minor third, the major and minor sixths; the mathematical relation of vibration ratios acceptable to the ear has become thereby increasingly complex.

2) Second: the great upheaval in music which began about 1900 may be considered in the light of 1) above as an entirely inevitable step in the admission of the seconds and sevenths, both major and minor, as "consonant" intervals. The implications of this statement are enormous. For one thing, it adopts a point of view in which the music of Hindemith, Stravinsky, Bartók, Schönberg, and, indeed, every other experimental composer of the twentieth century finds a place. Further, it reduces the controversy which has divided atonalists from the defenders of tonality to somewhat the same status as the Brahms-Wagner controversy of the nineteenth century.

In such a broad view as given in 1) above, the composition of music becomes a more or less systematic exploration of structural relationships possible with the sound symbol of any given period. More important, of course, than the mere complexity of the sound symbol as such is the logic with which it is used.

Given, however, that the seconds and sevenths were to become accepted as consonant, it was inevitable that some composer such as Bartók should explore the possibilities which such a concept of the sound symbol opened up by way of symmetries of the sort which Bartók did indeed construct; that another composer, such as Schönberg, would discard the harmonic organization of the past and posit a new relationship which would leave out of account the familiar tonality of earlier periods seems foreordained. Inevitable, too, was the experiment which others undertook in combining several tonalities in polytonal works.

Another implication of statement 2) is that our century, like the fourteenth, faces a major change in musical taste. In the Ars Antiqua of the thirteenth century, fourths and fifths were judged consonant, and thirds and sixths, dissonant; but early in the fourteenth century, we find the aesthetic judgment of these sounds not "reversed," as is so often erroneously said, but altered in such a way that fourths and fifths attain a new function while the now consonant thirds and sixths are open for exploration. This is to say that, from the fourteenth century until very nearly the end of the nineteenth, composers occupied themselves with the extension of harmonic devices made possible by the systematic exploration of thirds and sixths as consonances. And at the end of the nineteenth century, the tentative use of seconds and sevenths as consonances could no longer be delayed.

Apparently, once the Ars Nova change in taste had gained a certain degree of approval, its general acceptance came very quickly. There may, too, be a parallel here for our period: once the general public accepts seconds and sevenths without reservation as consonant, acceptance of the later music of the twentieth century may come with a flood. A conjecture here might hazard that the next decade will see this major change in taste.

It was naive in the extreme of theorists to assume that harmony had reached the limits of its extension with the harmonic system of the nineteenth century. In retrospect, nothing would seem more logical than that, with the example of the gradual admission of fourths and fifths as consonances, then of thirds and sixths, the next step must see the seconds and sevenths in turn relegate the thirds and sixths to a new function.

Similarly, it would now be absurd to consider the seconds and sevenths the final step in a series of evolving consonances, for our general statement 1) above admits no such limitation. The only limit which can logically be imposed upon harmonic evolution in this sense is the ability of the ear to distinguish pitch differences.

Finally, what are the implications of our general statement for the teaching of theory of music? It establishes a framework for a restudy of much that is familiar. We need to look back at least as far as Brahms and Wagner, where the seconds and sevenths become quite bold in chords of the seventh and ninth. We need to assess Debussy and Ravel from this point of view. Here, indeed, are composers whose

experiments are interesting, provocative, and productive. Lastly, we need to look at all the music of our own time, for it runs the risk of becoming popular!

BOOK REVIEWS

Edited by
Donald Loach

TECHNIQUES OF TWENTIETH CENTURY COMPOSITION. By Leon Dallin. Wm. C. Brown Co., Dubuque, Iowa, 1957, 223 pp., $3.50.

Most theory teachers throughout the United States will heartily agree that there is a legitimate need for a text-book that deals systematically with the materials of contemporary music. Leon Dallin, Associate Professor of Music at Long Beach State College, is to be congratulated for trying to remedy the situation with his Techniques of Twentieth Century Composition. Dr. Dallin offers a book that is "... designed to cover a year's work in college level composition courses... [or]... courses either more or less extensive."

He presents the materials in seventeen chapters as follows: Introduction; Melodic Contour and Organization; Modal Melodic Resources; Distinctive Twentieth Century Melodic Practices; Harmonic Structure; Harmonic Progression; Rhythm and Meter; Tonality; Cadences; Nonharmonic Materials; Motivation of Harmony; Thematic Metamorphosis; Imitative Procedures; The Twelve Tone Technique; Special Effects; Digest of Form; and Practical Suggestions. Dr. Dallin states that his order of presentation is based upon successful usage in his own courses, but he adds that other arrangements might be more profitable under different circumstances. The author's intentions seem to be clear enough: to guide the student as smoothly as possible from the known to the unknown, investigating first some basic principles which underlie twentieth-century melody, harmony, and rhythm, the proceeding to the examination of compositional elements (tonality, cadences, counterpoint, etc.) that require somewhat special treatment.

The author presumes a thorough acquaintance on the part of the student with the materials of composition in common use up to ca. 1870, and he at all times stresses the fact that twentieth-century usages have their roots deep within the practices of earlier times. Indeed, his insistence upon this fact is responsible for a large part of the rather stumbling, redundant prose that introduces the majority of his chapters. A single page (perhaps in the Introduction) devoted to the merits of an organic growth, as opposed to tangential culs-de-sac, in all artistic endeavor would have saved valuable space for further discussion of the material in question.

In general, the reader of the Techniques will find that Dr. Dallin's preoccupation with the young composer's freedom leads to a rather loose, thewless feeling in many chapters, though the material itself is presented quite directly. Close scrutiny and analysis is disregarded throughout in favor of a broader survey of twentieth-century techniques.

Chapter III, Modal Melodic Resources, seems disproportionately

long and dreary. The involuted treatment of the ecclesiastical modes reaches a climax of contortion in ex. 21 (p. 32) which lists all the modes in which each different tone of the chromatic scale occurs, e.g., c' — Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian, Locrian, etc. (cf. also the chaotic ex. 11, p. 97). Incidentally, the author eschews the "Academic distinctions . . . sometimes made between Ionian and major . . . ," yet he quite academically insists on building a case for the use of the historically ill-bred Locrian mode in contemporary melodies. The whole matter of modes could well have been given less space in the book; especially in view of the fact that the conclusions reached regarding their use in melody and harmony involve little more than an extremely civilized attitude toward the twelve tones of our system — namely, their individual diatonic status within the expanded concept of tonality that is standard in contemporary music.

The discussion of "synthetic" scales (i.e. not major, minor or modal) becomes rather twisted by the author's repetition of the statement to the effect that certain combinations of signatures in different staves of the piano part "produce" the synthetic scales. It would be more musical to assume that the scales were conceived first as departures from existing scale models (or, since Bartok figures heavily in this section, as scales with a close affinity to those of the Magyar and Slavic cultures), and that the different signatures simply represent notational expediency.

Non-harmonic materials are given cursory treatment in Chapter X. However, in support of the author, it must be remembered that this area of twentieth-century music is perhaps the most difficult to handle, since the extreme freedom of harmonies necessarily involves a compounded freedom of non-harmonic elements. Still it is curious that Dr. Dallin has not seen fit to include a formal discussion of one of the most important aspects of traditional non-harmonic tones in relation to contemporary music, i.e. their role as creators of many of the newer harmonies that are in common use today. The writers of past works similar to the Techniques usually include some mention of the phenomena that occur when appoggiature, for example, are left unresolved, or more often, are sounded together with their resolution tones. See, for example, p. 25 ff. of Mosco Carner's A Study of Twentieth Century Harmony (London, 1942); chaps. 3 and 4 of A. F. Barnes' Practice in Modern Harmony, 3rd print, (London, 1950); or for that matter, the section on "'Frozen' Accessory Tones" in Roger Session's rather expanded traditional harmony book, Harmonic Practices (New York, 1951), pp. 224-31. Such study has been proven an invaluable aid to the student's comprehension of more recent harmony and its all-important contrapuntal implications. Moreover, the same study provides one very definite bridge from the traditional to the contemporary, a matter with which the author is so thoroughly occupied throughout his Techniques.

The text of Dr. Dallin's book is at times quite lucid — at times unaccountably clumsy and inept. Despite the author's general success in avoiding that realm of personalized argot so attractive to many contemporary writers about music, there are several unfortunate choices

of phrase that cause the eye and the mind to stumble. For instance, the label, "Nonaccentual Rhythms," is given to those melodies or phrases whose rhythms do not coincide with the points of stress assigned by history to certain beats of the common meters. Another semantic trap is the phrase, "Motivation of Harmony" (Chap. XI), used to describe those devices employed by composers to provide their harmonies with rhythmic motion. It should be added here, however, that Chapter XI is otherwise one of the more successful sections of the book.

While Chapter XIV, The Twelve Tone Technique, presents a good, direct exposition of the fundamentals of that style, it is shocking to find that the name of Anton Webern is not mentioned at all, whereas the music of Ernst Krenek is quoted. Eventually, Webern's pointillism is dispensed with, along with the efforts of the so-called Total Organization composers of today, in three pages of the tiny chapter on Special Effects. This seems short-sighted especially when the church modes are given such extended coverage.

Perhaps the most outstanding feature of the Techniques is its impressive number of musical illustrations (296 exx. in 223 pp. of text), taken mostly from the works of important contemporary composers and presented in simplified reductions that allow for easy readability. Unfortunately, the documentation of these examples is not so impressive; for although page numbers are given according to those of the publications specified in the list of Sources of Examples, opus numbers, measure numbers, and rehearsal letters are not included, and very often the instrumentation is omitted altogether.

As for the examples themselves, it is not very surprising that the music of Bela Bartok is quoted by far the most frequently. Next in line stand Stravinsky, Schoenberg, and Hindemith, and after these, some thirty-four other composers. It is regrettable that many of the composers are represented by excerpts from works which they produced some time ago. Of the dates given in the Sources of Examples, only three are later than 1947. These three are: Milhaud's Concerto for Violin, No. 2 (1948); Randall Thompson's String Quartet, No. 1 (1948); and Bloch's Sinfonia Breve (1955). Moreover, the dates given in the Sources list are misleading, since, as the author notes, they represent dates of specific publications used for reference throughout his work and "... not always [by any means!] the date of first publication."

It would have been more desirable to draw the musical illustrations from more recent, indeed the latest possible works of certain outstanding composers represented. Such a policy would have served to insure that the Techniques would remain current for several years to come. But beyond this practical consideration, and far more important, it would have minimized the tendency on the part of the users of the Techniques, both teacher and student, to label certain composers according to their early styles only, particularly Stravinsky, Hindemith, Piston, Copland, and even Walton and Harris. These composers continue to produce important works today; and though their latest accomplishments may not exhibit essentially new techniques, though some do, they certainly reveal the most creative attempts thus far to synthe-

size the established usages of the twentieth century.

At this point, it might be well to examine more critically the purpose of Dr. Dallin's book and the prospective market for it. Can the Techniques be considered a text book for composition courses, or is it actually more of a syllabus on modern harmony? In his Introduction, Dr. Dallin stresses the fact that "... the potential ability to compose competently is as universal as the ability to play an instrument well." He also states, "It is accepted as natural for all composers to play. Should it not be just as natural for all players to compose?" It is the author's strong conviction that the composition of music is really an exoteric pursuit available to all students of music. And perhaps some musicians will find merit in this thesis. However, it is the opinion of this reviewer that such matters can not be quite so simple, and what is more, that the music student should never be given the slightest hope that they might be.

It would seem more reasonable to assume that Dr. Dallin is trying to say that the present day attitude toward theory instruction is really shallow, that courses in traditional harmony, counterpoint, orchestration, etc., are all integral parts of the study of composition, and not isolated occupations which have nothing to do with anything creative. After all, what is the study of traditional harmony but a means of training the student to compose (within the limits of his talent) in the musical styles of the common-practice period. Let us hope, at least, that the instructors of such courses attempt to encourage their students to compose creatively with these materials after the manner of the past masters.

Dr. Dallin's book provides a good continuation of this process, presenting the materials of contemporary composition, albeit bereft of didactic rules common to traditional harmony texts, so that the student may learn to compose in the styles common to his own time. It would appear then that the Techniques is no more a composition text-book than is Percy Goetschius' The Material Used in Musical Composition (New York, 1913) or Paul Hindemith's Traditional Harmony (London, 1943). And surely the mastery (broadly interpreted) of the usages presented in any of these works should be expected of all good music students.

And yet, composition, as such, must remain another matter entirely. The student should be aware at all times that the mere handling of the techniques of all earlier or contemporary styles does not make him a composer; furthermore, he should be brought up to respect that "... mystic art...." for what it is: a high and noble calling that unreservedly welcomes all aspirants, but one that, in the end, sustains only a select few. There is no cruelty accompanying such exclusive limitation of the guild; on the contrary, the only cruelty involved arises from knowing degredation of art.

In his Preface, Dr. Dallin predicts fairly well the prospective consumers of his book: "Many teachers are called upon to teach composition [we might substitute, modern harmony] classes whose experi-

ence and training have been concentrated in the theoretical rather than in the creative aspects of music." Add to this the great number of instructors who, besides teaching courses in their field, are required to take a section or two of "theory" courses. These are the teachers who will find the Techniques a real aid in their work. For this group, specifically, Dr. Dallin might well have included a supplementary list of works that contain relevant examples at the end of each chapter. He might also have added a list of books for further, more detailed study of specific techniques covered in his text.

The composer-teachers who have taught the materials of twentieth-century music in the past without the aid of a text-book will no doubt have long since gathered their materials, and in most cases, they will have kept their work up-to-date by carefully examining the most recent works of our major (and minor) composers. The instructors of this latter group may indeed find good use for Dr. Dallin's Techniques; on the other hand, they might find it relatively limited for use as a text-book in courses to be taught in 1958.

The following incomplete list of corrigenda will be of interest to some readers:

1) pp. 49 and 50, exx. 24 and 25, the copyright (and the composer's) date is 1940, as given in the Sources list (p. ix) — however, there seems to be considerable doubt as to the accuracy of the copyright date;

2) p. 76, ex. 31, Ravel's polychord consists of two triads a minor 2nd, not an augmented 4th, apart;

3) p. 91, line 1 should read, "... Dorian or Aeolian on D...";

4) p. 96, ex. 9, the page no. is 41 instead of 43, and here the danger of the author's simplified reductions is most apparent — the stem arrangement in the upper two voices, measures 3-5, makes a most unforgivable mess of Britten's contrapuntal lines;

5) p. 96, ex. 10, the three part F-sharp triads should be given in meas. 2, 1st 3 notes, as they are in meas. 4;

6) p. 104, ex. 24, g-flat is missing in the signature that Dr. Dallin adds;

7) p. 130, ex. 15, the page no. (p. 14) should be given — incidentally, this item should be added to the Sources list (p. ix); and

8) p. 199, ex. 4, remembering the author's suggestion (p. xviii) that the student be encouraged to indicate tempo, phrasing, dynamics, etc. in his exercises, it would not have been excessive for him to include the

time-signature, double-bar, repeat sign, phrasing marks and dynamics in the quotation from Webern's Symphony.

NICHOLAS ENGLAND

* * * * * * * * * * *

FOURSCORE CLASSICS OF MUSIC LITERATURE. By Gustave Reese. The Liberal Arts Press, New York, N.Y., 1957, 91 pp., $1.25.

This compact and inexpensive volume is an essential part of the library of anyone studying or teaching music theory. In it Dr. Reese has presented "thumbnail sketches" of the contents of eighty classics in the field of musicology which exist not at all or only in part in English translation. It is his hope to stimulate the translation of the basic work materials of the musicologist and music theorist into our native tongue. What he has provided is a brief summary of the contents of each of the eighty treatises with an appended bibliography for each item which gives the presently available source materials in the original language or in translation to some language other than English. In putting together this useful reference manual, the author has accepted two of the most trying duties for a scholar: the selection of those few treatises out of a vast corpus that will satisfactorily summarize the development of musical thought, and the condensation of the contents of each treatise into a few words that will nevertheless convey the content, manner of presentation, and value of the treatise. Dr. Reese has succeeded admirably on both counts.

With regard to the problem of selecting representative treatises, there is always room for a difference of opinion. Such disagreement does not invalidate the anthologist's choices but would supplement them. This reviewer was surprised by the choice of documents for the late eighteenth century which does not include any treatise on the new technical problem of functional harmony and its application to formal problems. Neither Marpurg, Kirnberger, nor Heinrich Cristoph Koch is represented. The last-named's Versuch einer anleitung zur composition (3 vols., 1782-93) is certainly of great significance since it provides an extensive account of the formal practices of Haydn and his contemporaries. That Dr. Reese chooses largely monographs on aesthetic doctrine to represent the nineteenth century perhaps properly underscores the barrenness of technical theory in the last century. The century did produce, however, three great general courses in composition of which Dr. Reese lists the least significant, that of Vincent D'Indy. Far more concerned with the real problems of musical composition as they faced the nineteenth century composer is Gottfried Weber's Theorie der Tonsetzkunst (1817). The first volume of the Weber book, dealing with the basic elements of music, is available in a nineteenth-century English translation by J. F. Warner under the title The General Music Teacher. The other complete method of composition, that of Adolf Bernhard Marx, is justifiably omitted, since it exists in its entirety in English. The twentieth century is represented by Schenker, Schoenberg, and Haba. It is natural that the personal tastes of an an-

thologist should be most evident in his choice of contemporary materials. However, if Schoenberg's Harmonielehre, already available in English, is included in an anthology with the avowed intention of Dr. Reese's, then certainly the Unterweisung im Tonsatz (2 vols., 1937-39) of Hindemith should also be considered.

DAVID KRAEHENBUEHL

* * * * * * * * * * *

TONALITY AS A BASIS FOR THE STUDY OF MUSICAL TALENT. By Erik Franklin. Gumpert's Forlag, Goteborg, Sweden, 1956, 193 pp., $5.50.

Tonality is, and has apparently always been, a prime area of musical speculation. Musical ability and the relation of musical ability to general intelligence and the configuration of melody are also fruitful facets of musical inquiry. These are the problems which Erik Franklin seeks to develop and report in his research.

Franklin's work presumes to determine the extent that musical "talent" is involved in the experience of tonality. His is a psychological thesis — to study talent as a "mental function" — to find the "psychological plane" on which the "tonality experience" should properly be placed — to observe the results of factor analytical studies relating TMT (tonal musical talent) to pitch, tone, memory, multipart music, rhythm, phrasing and dynamics, and to general intelligence.

Certain aspects of Franklin's investigation are focused on music theory: namely, the discussion of tonality as a musical concept, tonality and the various tones in the scale, and some interesting observations on the "mechanical-acoustic ear" as contrasted with the "judicious-musical ear." The scope and intention of the author's study is to develop a psychological method to explain tonality. But, in the final analysis, the nearly 200 pages of the Franklin report are, in a large measure, devoted to statistical interpretations made by the author and various sources to which the author refers.

As is often the case, certain original, challenging problems of considerable breadth are posed and then modified, compromised, and redefined. The reviewer observes that his expectations from the title page are reduced in the text by the description of experiments concerned with ending-tone preferences. Using several graded series of about 30 short two-part items in the major and minor modes, Franklin collects data and spins out speculations about the ability or inability of his subjects, some 100 selected Training School students in Skara, Sweden, to sing or whistle a predetermined "tonic" end tone. This routine was developed over a period from 1937 through and beyond 1946. The raw data are followed by a maze of tables, graphs, and generalizations leading to the formulation of a test of musical talent.

It is with the theory of Rameau and his manifold contradictions, exceptions, and errors that Franklin postulates tonality. Anticipating

the reviewer's observation of this, Franklin provides a long and detailed two-page footnote beginning, "Although this thesis is written for psychologists we shall endeavour to reply briefly to objections which may be anticipated from those concerned with music...regarding the use of tonality in the manner indicated for psychological research." The author concludes his reply with an unconvincing reference to the traditional theory of harmony indicating, this reviewer would say, a pedestrian and unscholarly treatment of tonality. And, though it may not be appropriate in this journal to so comment, the author seems to summarily only touch on a few choice "music-psychologists." Tonality is considered as a habit based on feelings; the end tone brings a tonal tonus condition of rest; tonality is a musical counterpart to language parts of speech; a test using tonality should be compared with an intelligence test with language as a medium; tonality is a result of the emergence of part music; a test using tonality in the form of end tone observations should give information concerning (1) capacity for forming musical habits, (2) capacity to form these habits in a manner comparable to language, and (3) ability to form a synthesis from several musical dimensions in a vectorial interplay. There are no basic psychological processes elucidated here. The recourse to the science of psychology (physiological, experimental, or acoustical) is weak. The interpretation of the Gestalt theories is, it seems at times, fallacious. As to music theory and music psychology, the book is unrewarding. The statistical treatment expands and details the data beyond a meaningful point; it becomes actually confusing and irrelevant.

The main thesis of Franklin's endeavor is exciting; the research, method, source material, and plain logic are disappointing. Much is left to be said on the subject. In addition to the main thesis, several good contributions are made in Franklin's treatment of the problem: a comparative discussion and bibliography of the "musical talent" tests up to the mid-1940's, a careful analysis of ending tone preferences, a focus on the multidimensional character of pitch with reference to tonality, and some stimulating ideas on the correlations between pitch discrimination, tonality, and general intelligence.

Franklin has a salient point, an excellent, yet to be solved field for research, "that actually very little has been said with regard to a psychological explanation of the phenomenon of tonality." At least, it is felt by the reviewer, not enough has been said. Isn't there anyone to formulate and structure the phenomenon of tonality to include all of the manifold phases of tonal relations in the realm of music? Can we not then proceed more fully to explore the basic psychological, social, and physical implications of tonality?

In spite of disconcerting idiomatic syntax due to translation, and a few misspellings, one is glad to have Franklin's thesis available in English.

GEORGE H. JACOBSON

****

PROBLEMS OF ART. By Susanne K. Langer. Charles Scribner's Sons, New York, N.Y., 1957, 184 pp., $3.50.

Problems of Art is a collection of occasional lectures on various aspects of Mrs. Langer's aesthetics and yet it is remarkably both complete and concise. To become acquainted with Mrs. Langer's influential contributions one might well read Problems of Art in preference to her imposing Feeling and Form since she re-casts details in her theory and changes some terminology.

The framework of her theory remains unaltered. It is a metaphysical theory in that it is developed by a process of extensive definition, starting with certain key premises elicited in answer to a "central question." Mrs. Langer's question is "what is created in a work of art?" Her answer is that an art work creates a form expressive of what can be felt about human experience and which is presented for our direct perception. While the art work is "symbolic," the "art symbol" is different both in kind and function from the symbolism of everyday language. That is, the "expressive form" of an art work sums up, in a "single symbol," the subjective experience. The sense in which Mrs. Langer uses "symbol" is admittedly an amended one. Accordingly we must not ordinarily expect to get cognitive meaning from an art work. But what we can hope to get — if we intuit well enough — is awareness of the "import" of a work, a quality or emotional content which cannot be expressed by conventional discourse. Substitution of new phrases, such as "expressive form," "transformation," and "primary apparition" respectively for the former "significant form," "transcendence," and "primary illusion" does not appear to affect her position.

"Intuition," which occupies a key position in Mrs. Langer's theory, is rather broadly defined: "It comprises all acts of insight or recognition of formal properties, of relations, of significance, and of abstraction and exemplification." It is intended to help explain "import" — which, however, it may fail to do for those who define intuition less inclusively or rely upon it less. And for those people Mrs. Langer's question of what is created may be less fruitful than the age-old, thorny question as to whether any "import" intended by an artist is received by listeners or observers as the same "import." The problem of communication remains open. Mrs. Langer apparently wishes to avoid the issue and therefore rightly maintains that the "import" of any art work can never be expressed verbally. On this point hers is a difficult position either to understand or to assail.

Some readers of the book, whom Mrs. Langer would surely rebuke as "amateur philosophers," may notice that she tends to empty certain key definitions of content. For example, on analyzing her definition of a work of art one might wonder about the apparent irrefutability of her theory. Mrs. Langer's definition is couched so that there are scarcely any criteria for testing the validity of judgments of a specific work. In view of her manner of definition reference to facts about a work are largely irrelevant, if not altogether so. After reading Mrs. Langer's explanations, one might either say "Ah, yes!" (because her argument has been emotively effective) or remain somewhat puz-

zled and maybe ask "Yes, but when is anything a work of art?"

WILSON COKER

* * * * * * * * * * *

SIGHT-SINGING MANUAL. Third edition. By Allen Irvine McHose and Ruth Northup Tibbs. Appleton-Century-Crofts, New York, N.Y., 1957, 186 pp., $3.50.

Since this third edition of the widely used McHose-Tibbs Sight-Singing Manual in the Eastman School of Music Series of pedagogical publications is a considerable expansion of earlier editions, an appraisal of the materials and methods seems to be in order. According to promotional announcements, "two new sections have been added to provide a more complete and broad experience; one dealing with chromaticism, and the other containing music of the 16th and 17th centuries. Short melodies under the heading of 'Quickies' have been added in some sections of the manual. They are either fugue subjects or thematic phrases from instrumental or vocal music, and will provide an excellent means for determining how well the student has grasped the material in each section." The material provided consists of 627 folk-songs and thematic fragments taken from the literature of five centuries. The use of material derived from our musical heritage is unquestionably superior to the artificially contrived melodies which prevail in most solfege and sight-singing collections.

The study of sight-singing should have as its primary purpose developing the student into a virtuoso singer of any single-lined music regardless of the quality of his vocal equipment. Such skill, if it is to have any validity, must of course be measured against the highest achievement of this art as practiced by our finest professional musicians. The sight-reader must acquire sufficient facility to arrive at a conception of the music, through singing, with accuracy and without the slightest hesitation. Anything that interferes with this standard interferes with the ultimate musical conception.

How is this skill to be achieved? For those who can sing the material in this book in the manner stated, the book is obviously unnecessary. For the student who cannot, a question arises as to whether the methods and materials presented in this book can make it possible to achieve the desired goal.

In the study of rhythm, the authors start with the assumption that the student understands the relative values of note- and rest-symbols, the function of the ties and the dot, time signatures, tempo words, repeat signs and the beat organization within the measure. For those who are not fully informed in this area, so much unexplained material is more likely to create discouragement than curiosity. Further frustration might result from attempting to pronounce the titles of the folk-songs which are given in their original language. The reason for this is not clear since no text in any language is given in the book. In vocal music, divorcing the text from the music is a questionable procedure.

The student is introduced to a method of rhythmic reading which employs reciting syllables, conducting with the right hand and tapping the background of the beat with the left hand. In the application of these co-ordinated efforts, a fundamental error occurs — a set of symbols is created which has more than one meaning. On page 7, we find the same recitation word "one-te" is used for both the ♩. ♪ and the ♫ . Of course, if the student silently counts the start of the beat represented by the dot in the first example, he should sing the pattern correctly. However, if the teacher and student find it necessary to discuss these patterns, the identical recitation syllables will create unnecessary difficulty. Similarly, on page 62, the same recitation syllables are used for the ♫ and ♫. . On page 112, we find the recitation words "one-two" used for a pair of half-notes within a $\frac{2}{2}$ bar. In the succeeding measure, the words "one-two-three" are used for a triplet of half-notes. Should the student be expected to sing the "two's" any differently and why, and how? Is the student expected to know that the beat locations of that triplet, and there are only two beats there, are more clearly notated by the pattern ♫♩♩? The explanation offered is simply not true. A triplet in a measure does not represent a complete triple-meter bar. Further inconsistencies of this sort are found elsewhere in the method.

In Section VII concerned with the "subdivision of the background," we find an especially complex organization of reciting syllables — one that reminds us of the cure that killed the patient. The reviewer purposely asked some very competent instrumentalists to sing the rhythms of the five examples on page 118. This was requested simply to confirm or negate the objections entertained about the application of reciting syllables at this level. Each of these skilled instrumentalists sang these examples flawlessly without the recitation syllables but stumbled repeatedly when he attempted to recite them in tempo.

Concerning the pitch aspect of this manual: again is it proper to assume the the student can read in the various clefs and can sing any series of intervals without any hesitation? Since the earlier exercises in the manual are organized in accordance with major and minor tonalities and with specified simple harmonic implications, a certain amount of guess work based upon acculturation can assure a reasonable success. The true test of one's skill in handling the tonal aspects of sight-singing can be demonstrated by the singing of intervals against a more complex harmonic background. The more sensitive and skillful composers in the vocal medium of the nineteenth and twentieth centuries are generally in agreement as to the intervallic organization of their vocal lines. Stylistic distinction is achieved by the background. A simple pattern, as the F-major triad in the voice part in the example given below, should demonstrate that knowledge of the intervals, per se, can best be verified in a context of harmonic distraction:

In singing such an example, the student should be given access to the voice part only.

When one can sing any vocal or instrumental line against harmonic resistance, he is dealing with the real application of sight-singing. Little of our literature nowadays is monody. The singer and wind instrumentalist, particularly the brass player, must hear successive tones before they perform them and against whatever tonal medium is sounding at that time. Except for the relatively neutral harmonic background provided in Chapter XIII dealing with "sixteenth and seventeenth century part music," the problem of singing a melodic line in an harmonic context is left unconsidered.

For those who have a nominal skill in sight-singing and those who use a more consistent and logical method than that presented in this manual, this sight-singing manual provides a useful collection of practice materials. It serves only intermediate needs. Those who can sing melodies, unaccompanied, are still in for a surprise when they try to sing a contemporary line with its accompaniment at sight.

ASHER ZLOTNIK

Other Books Not Reviewed

Ballard, Edward G. ART AND ANALYSIS. Martinus Nijhoff N. V., The Hague, Netherlands, 1957, 219 pp., guilders 15.25.

Bergsagel, John D. THE NATIONAL ASPECTS OF THE MUSIC OF RALPH VAUGHN WILLIAMS. University Microfilms Publication No. 22,194, University Microfilms, Ann Arbor, Mich., 1957, 329 pp., $4.25.

Bullough, Edward. AESTHETICS. Stanford University Press, Stanford, Calif., 1957, 158 pp., $4.50.

Colucci, Matthew Joseph. A COMPARATIVE STUDY OF CONTEMPORARY MUSICAL THEORIES IN SELECTED WRITINGS OF PISTON, KRENEK AND HINDEMITH. University Microfilms Publication No. 23,583, University Microfilms, Ann Arbor, Mich., 1957, 195 pp., $2.55.

Cooper, Grosvenor. LEARNING TO LISTEN. University of Chicago Press, Chicago, Ill., 1957, 167 pp., $3.75.

Erickson, Robert. THE STRUCTURE OF MUSIC: A LISTENER'S GUIDE. Noonday Press, New York, N.Y., 1957, 209 pp., cloth $4.00, paper $1.45.

Farnsworth, Richard. A SOCIAL PSYCHOLOGY OF MUSIC. The Dryden Press, Inc., New York, N.Y., 1958, 304 pp., $4.50.

Girdlestone, Cuthbert. JEAN-PHILIPPE RAMEAU: HIS LIFE AND WORK. Cassel and Co., London, Eng., 1957, 627 pp., 84/-.

Hanslick, Eduard. THE BEAUTIFUL IN MUSIC. Translated by Gustav Cohen. Liberal Arts Press, New York, N.Y., 1957, 127 pp. $0.80.

Hartog, Howard, editor. EUROPEAN MUSIC IN THE TWENTIETH CENTURY. Frederick A. Praeger, New York, N.Y., 1957, 341 pp., $7.50.

Horacek, Leo. THE RELATION OF MOOD AND MELODIC PATTERN IN FOLK SONGS. University Microfilms Publication No. 21,688, University Microfilms, Ann Arbor, Mich., 1957, 141 pp., $2.00.

Hunter, Joseph L. ACOUSTICS. Prentice-Hall, Inc., New York, N.Y., 1957, 407 pp., $8.50.

Jacobs, Robert L. HARMONY FOR THE LISTENER. Oxford University Press, New York, N.Y., 1958, 180 pp., $2.90.

Jorgenson, Dale Alfred. A HISTORY OF THEORIES OF THE MINOR TRIAD. University Microfilms Publication No. 22, 691, University Microfilms, Ann Arbor, Mich., 1957, 176 pp., $2.30.

Pankaskie, Lewis V. TONAL ORGANIZATION IN THE SONATA MOVEMENTS OF HAYDN'S STRING QUARTETS. University Microfilms Publication No. 21,344, University Microfilms, Ann Arbor, Mich., 1957, 341 pp., $4.40.

Pautz, Zane Ernest William. TYPES OF MUSICAL MYSTICISM: A STUDY OF THE TECHNICAL MEANS USED BY COMPOSERS OF VARIOUS PERIODS TO EXPRESS MYSTICISM IN MUSIC. University Microfilms Publication No. 24,316, University Microfilms, Ann Arbor, Mich., 1957, 149 pp., $2.00.

Pratt, Carroll C. THE DESIGN OF MUSIC. [A reprint from the Journal of Aesthetics and Art Criticism 12: 289-300, Mar 54]. The Author, Princeton, N.J.

Rostand, Claude. FRENCH MUSIC TODAY. Merlin Press, New York, N.Y., 147 pp.

Wolf, Henry S. THE TWENTIETH CENTURY PIANO SONATA. University Microfilms Publication No. 21,946, University Microfilms, Ann Arbor, Mich., 1957, 593 pp., $7.55.

BIBLIOGRAPHY OF CURRENT PERIODICAL LITERATURE

Compiled by
Donald Loach

The articles listed below appeared in periodical publications between June 1957 and January 1958.

Music Periodicals in English

Carroll, J. Robert, "Contemporary Music and the Liturgy,"
Gregorian Review, Vol. 4, No. 6:32-47, Nov 57.

Jacobi, Erwin, "Harmonic Theory in England after the Time of Rameau,"
Journal of Music Theory 1:126-46, Nov 57.

Keller, Hans, "Functional Analysis: its pure Application,"
Music Review 18:202-6, Aug 57.

Keller, Hans, "Schoenberg's 'Moses and Aron',"
The Score, No. 21:30-45, Oct 57.

La Rue, Jan, "A System of Symbols for Formal Analysis,"
Journal of the American Musicological Society 10:25-8, Spring 57.

Loach, Donald, "A Stylistic Approach to Species Counterpoint,"
Journal of Music Theory 1:181-200, Nov 57.

Mason, Colin, "An Essay in Analysis: Tonality, symmetry and latent serialism in Bartok's fourth Quartet,"
Music Review 18:189-201, Aug 57.

Murray, Dom Gregory, "Plainsong Rhythm: The Editorial Methods of Solesmes,"
The Score, No. 21:46-59, Oct 57.

Nakaseko, Kazu, "Symbolism in Ancient Chinese Music Theory,"
Journal of Music Theory 1:146-80, Nov 57.

Nettel, Reginald, "Electronic Music,"
Monthly Musical Record, Vol. 87, No. 983:163-8, Sep 57.

Rands, Bernard, "The Use of Canon in Bartok's Quartets,"
Music Review 18:183-8, Aug 57.

"Recommendations in Theory, Music History and Literature,"
Bulletin of the National Association of Schools of Music 45:1-8, Jan 58.

Savill, Agnes, "Physical Effects of Music,"
Music & Letters 39:16-28, Jan 58.

Shirlaw, Matthew, "The Science of Harmony,"
Music Review 18:265-78, Nov 57.

Talley, Howard, "Teaching Elementary and Strict Counterpoint Concurrently,"
American Music Teacher Vol. 7, No. 2:14+, Nov 57.

Truscott, Harold, "Some Aspects of Mahler's Tonality,"
Monthly Musical Record, Vol. 87, No. 984:203-8, Nov 57.

Tuttle, T. Temple, "Schoenberg's Compositions for Piano Solo,"
Music Review 18:300-18, Nov 57.

Other Periodicals in English

Whittington, R.W.T., "The Assessment of Potential Musical Ability in Secondary School Children,"
Journal of Educational Psychology 48:1-10, Jan 58

Music Periodicals in Other Languages

Becher, Oskar, "Frühgriechische Mathematik und Musiklehre,"
Archiv für Musikwissenschaft 14:156-64, 1957.

Eggebrecht, Hans Heinrich, "Arten des Generalbasses im frühen und mittleren 17. Jahrhundert,"
Archiv für Musikwissenschaft 14:61-82, 1957.

Feil, Arnold, "Zum Gradus ad Parnassum von J. J. Fux,"
Archiv für Musikwissenschaft 14:184-92, 1957.

Hoffman-Erbrecht, Lothar, "Sturm und Drang in der deutschen Klaviermusik von 1753-1763,"
Der Musik-Forschung 4:466-79, 1957.

Lohmann, Johannes, "Die griechische Musik als mathematische Form,"
Archiv für Musikwissenschaft 14:147-55, 1957.

Rufer, Joseph, "Was ist Zwölftonmusik?"
Neue Zeitschrift für Musik, Jan 58.

LETTERS TO THE EDITOR

Note or Tone?

In the face of the general obfuscation of perception and thought in Miss Warner's commentary ("Somebody throwed away some perfectly good dead cats!") there really doesn't seem to be much use continuing that conversation. It gave further evidence of the extent to which "music educators" generally find it impossible to dissociate the function of music-notation from its involvement with keyboard instruments. (Similar evidence is to be found in all the elaborate and expensive commercial "sets" of books with which the field is dominated. They purport to teach vocal reading, mostly from the early grades. Their success in that area is not evident, but the methods and principles are asserted as dogma.)

Coping with the other necessary dissociation which any clear thinking on the matter demands — that distinction between the sound experienced and the code inscription that records it — seems to be even more difficult, as the letter from Mr. Eric Blom (though prompted by another article) bears witness. If Mr. Blom is irritated by the limitation of "note" to the written symbol, and would follow the English poets in their use of the same word also to refer to the sound, with what assignment of terms would he make that important distinction in a discussion where it is essential to do so? In such a context, it is not a matter of being Germanophile, but of assigning terms for essential semantic clarity. Was it not Mr. Blom himself who some years ago assailed in print the kind of teaching that failed to make this distinction in practice ... that gave primary importance to notation and only secondary and later place to the experience of the ear? It is just such "Cart-before-Horse" thinking as he criticized at that time which makes it necessary to abandon in this context the loose terminology of the poets (though it may serve them adequately) and make for our purpose not an American language but a more precise English. The problem which then concerned Mr. Blom, and which was also mine, was that of going from what is experienced in "tone" (the sound) to its inscription in "notes" (the symbol). The teaching problem as we presented it was that of how to arrive at an established and functioning meaning-relationship from the right direction, as is done in the teaching of elementary language-reading, despite the ambiguity of the code. Perpetuating ambiguities in our thinking, however strong their poetic appeal, will not help clarify this problem.

Stanley Fletcher

A Note on Thorough Bass

The subject of thorough bass is entitled to consideration only by reason of its historical implications. At the turn of the seventeenth century, Lodovico da Viadana and his cohorts, the composers of the earliest Florentine operas, developed but apparently did not invent the system of musical stenography called basso continuo which grew out of the improvisation methods of the preceding century. The manner of providing the bass part with numerals and other signs to indicate the "general" harmony was also called basse chiffrée in France, General-bass or bezifferter Bass ("figured bass") in Germany, and Thorough-bass in England. The method was neither complete as a whole nor complete in any of its parts; in short, it was not "thorough." Nor is it to be inferred from this that "thorough" in the seventeenth century had the meaning we now generally attach to that word. It was simply an archaic variant of "through"; and this term, as may be seen, has an affinity of meaning with the Italian continuo, referring to the continuous performance of an accompaniment by Organ or Cembalo throughout a piece. This method of notation served a useful function in the performance of accompaniments for almost two hundred years, from about 1600 to sometime after the death of Bach in 1750. And that was the one and only purpose it was designed to serve. It was a bad mistake ever to establish the idea of figured bass as a mode of procedure in the mastery of harmonic materials, for nothing could be more calculated to paralyze whatever spark of incentive and inspiration there may be than enforced concentration upon this altogether dubious device.

Julius Gold

CONTRIBUTORS TO THIS ISSUE

RICHARD L. CROCKER teaches the history of music in the department of music at Yale University.

JOSEPH E. YOUNGBLOOD is completing his doctoral studies at Indiana University.

WILLIAM THOMSON is a member of the music faculty of Sul Ross State College in Alpine, Texas.

HANS LENNEBERG teaches in the department of music at Brooklyn College.

HOWARD BOATWRIGHT is associate professor of the theory of music in the Yale School of Music.

WILLARD WARCH is a member of the faculty of the Oberlin Conservatory of Music.

HANS TISCHLER is associate professor of the theory of music at Roosevelt University in Chicago.

WILLIAM H. REYNOLDS is assistant professor of music at the University of California in Riverside.

LEIGH GERDINE is chairman of the department of music at Washington University in St. Louis.

NICHOLAS ENGLAND is a member of the music faculty of Baylor University currently completing his doctoral studies at Harvard University.

GEORGE JACOBSON is chairman of the department of music at the College of Emporia.

WILSON COKER is a composer and assistant in instruction at Bennington College.

ASHER ZLOTNIK is a member of the faculty of the Hartford School of Music and has had many years of successful experience as a private teacher of basic musicianship.

Printed by Central Duplicating Bureau, Yale University

A M
Kra
will
patt
lem

TOV
cus
eth-
as t

The
RHE
tion
cal

The
tori
sign
and

REV
OGE
of n

In p
theo
to th
tran
edit
issu

Sing

ANNOUNCEMENT

VOLUME II, Number 2

Appearing in November 1958

A MEASURE OF STRUCTURE IN MUSIC by Edgar Coons and David Kraehenbuehl will present a new method of formal analysis which will provide an objective evaluation of the formal properties of any pattern in time. The application of this measure to aesthetic problems in music will be briefly indicated.

TOWARDS A NEW CONCEPT OF TONALITY? by Roy Travis discusses and illustrates an approach to the study of tonality in twentieth-century music. Compositions of Stravinsky and Bartok will serve as the basis for a demonstration of this approach.

The second part of JOHANN MATTHESON ON AFFECT AND RHETORIC IN MUSIC by Hans Lenneberg will complete the translation of portions of a significant eighteenth-century treatise on musical practice, Der vollkommene Capellmeister of Mattheson.

The THEORY FORUM will include a discussion of the general historical process which provides the elements of music with functional significance and other provocative papers in the field of harmony and pedagogy.

REVIEWS OF CURRENT BOOKS will be continued and the BIBLIOGRAPHY OF CURRENT PERIODICAL LITERATURE in the field of music theory will be kept up-to-date.

In preparation is a bibliography of English translations of significant theoretical treatises of the past which should form a companion piece to the recent summary of major treatises not available in English translation prepared by Dr. Reese (see page 112 of this issue). The editors hope that this bibliography will be ready for the November issue.

PRICES

Single issues: $2.00

Subscriptions: 1 year $3.50
2 years $6.75